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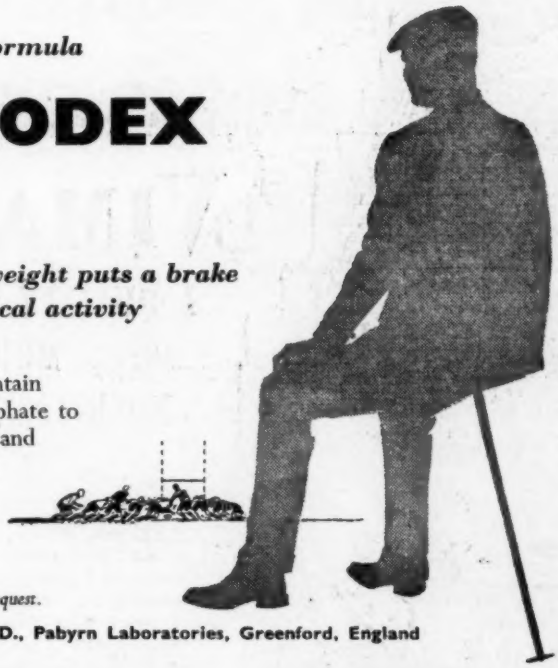

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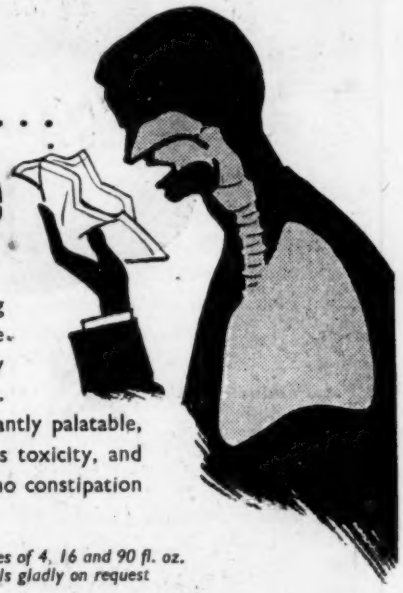

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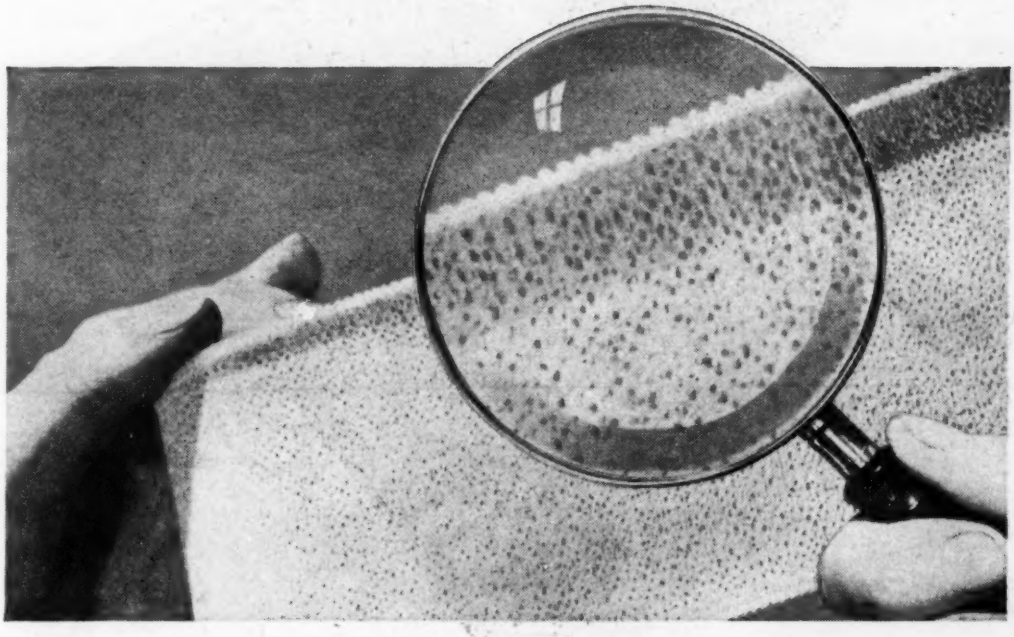

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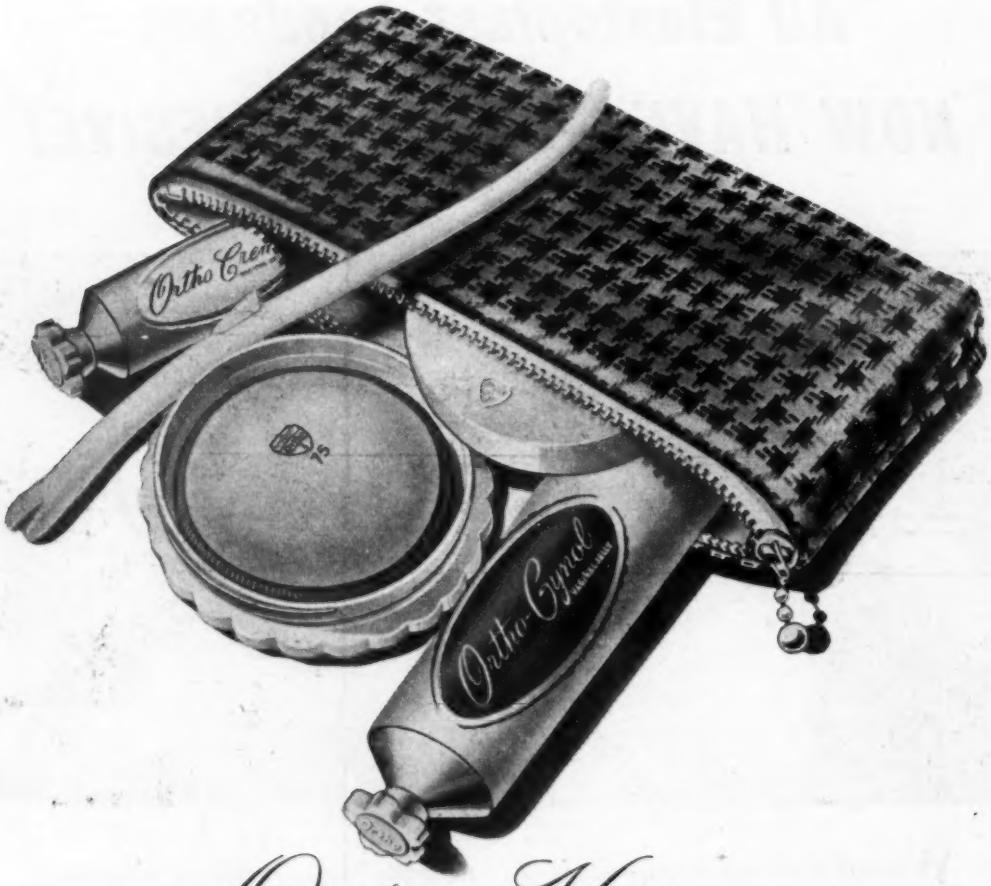

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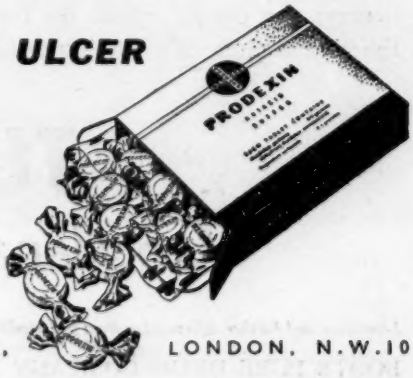

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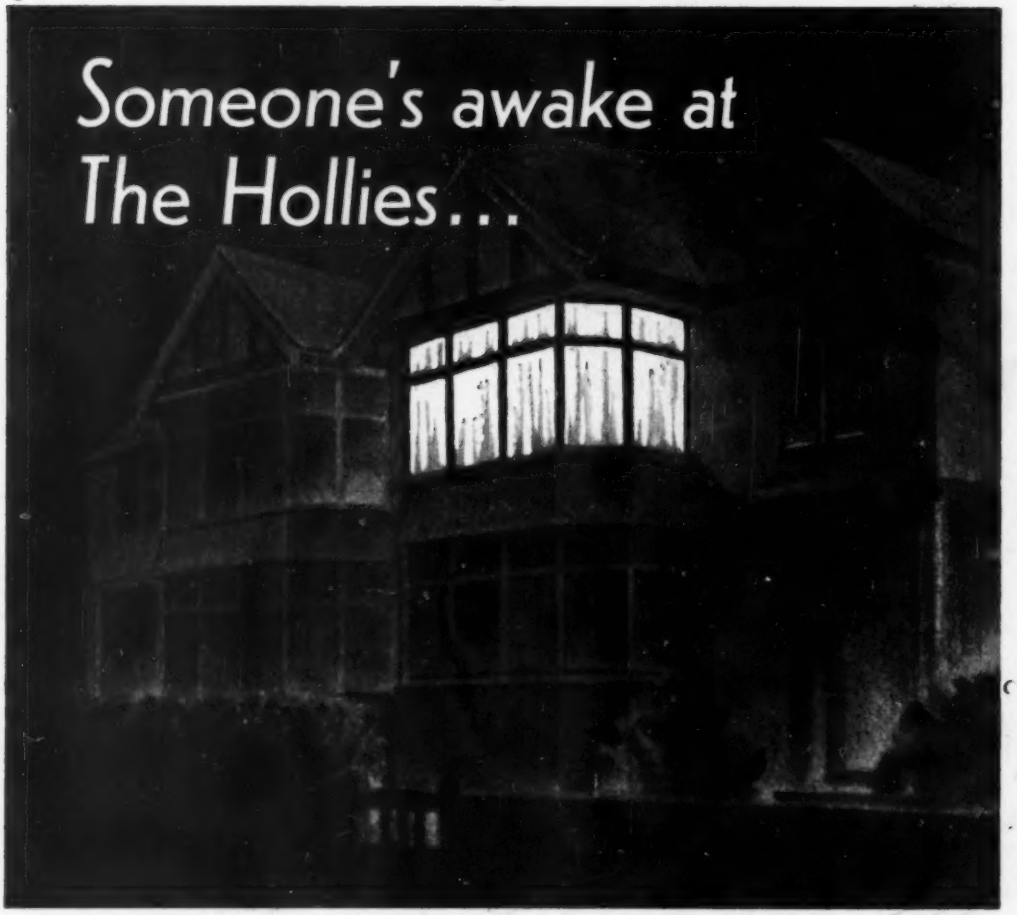


The sleeplessness caused by a persistent, unproductive cough can be very exhausting. TUSANA provides a blend of expectorants to loosen the tenacious mucus, and the central sedative, codeine, to depress the cough reflex. By breaking the vicious circle of coughing and irritation, Tusana allows the patient to sleep and gather strength for recovery.

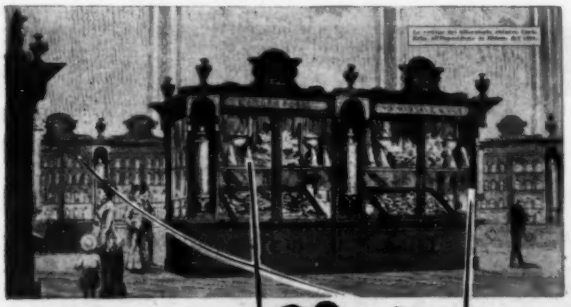
Available under the N.H.S., Tusana costs *less than* comparable official preparations.
Basic N.H.S. prices 20 fl. oz. 8/4, 80 fl. oz. 30/-

TUSANA
Cocillana Cough Linctus

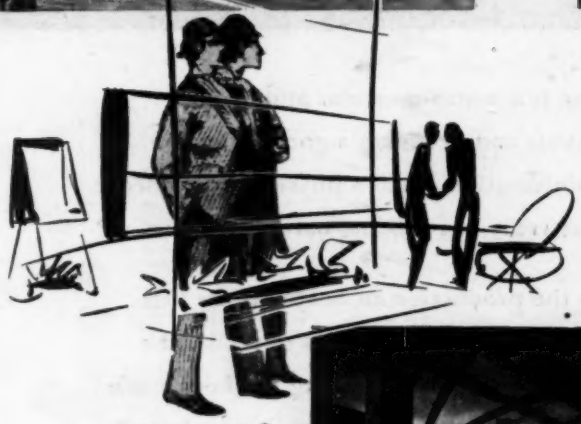
Literature and further information from the Medical Department
BOOTS PURE DRUG COMPANY LIMITED, NOTTINGHAM, ENGLAND

S206

In keeping with the times



In Great-grandfather's day, at ponderous and infrequent Exhibitions in austere Salons, the then-dawning pharmaceutical laboratory first timidly displayed its few products to the Public



Today an important Pharmaceutical Industry is represented at the countless Exhibitions in all parts of the world with fitting displays on most modern lines - a direct liaison between the many specialized products and the attention and approval of the physician

CARLO ERBA
ESTABLISHED: 1853

A physiological treatment of constipation

SENOKOT RESTORES NATURAL RHYTHM

Senna is a neuro-muscular stimulant of peristalsis and produces a good imitation of normal defaecation. Such a physiological effect is of great value in restoring natural rhythm.

Through the production of Senokot, the first stable, standardised preparation of senna, the full therapeutic activity of the drug has been made available and its re-educative effect demonstrated.

Senokot REGD.

STANDARDISED SENNA GRANULES

Lancet, 1952, 1, 655.
ibid 1953, 1, 497 and 602.
Practitioner, 1953, 170, 266.
Medical Press, 1954, 231, 521.

Dose: children ½—1, adults 1—2 teaspoonfuls.
Sizes: 2 oz., 6 oz., dispensing pack of 2 lb.
Category 3: Joint Committee on Prescribing.
Senokot is not advertised to the public.

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Introducing

ANABALM
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An adjunct in the treatment of Rheumatic and Fibrositic Conditions

A non-greasy, readily absorbed cream for use as an adjunct in the treatment of rheumatic and allied conditions. Contains:— Squalene 10%, β-Chloroethyl Salicylate 10%, Oleoresin of Capsicum 0.1%, Menthol 4%, Histamine Hydrochloride 0.1%.

In Anabalm the salicylate is presented in a new form which gives a gradual release of the active radicle.

Histamine has a vaso-dilatory effect which helps to increase the supply of blood to the affected area. At first menthol produces a feeling of cold, but this is succeeded by a sensation of heat, and the skin temperature of the area being higher than that of other parts of the body, the vessels are partly dilated.

Packing: 1oz. tube. ***May we send literature and a specimen?***

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The paroxysmal abdominal pain of infantile colic is a result of smooth muscle spasm of the gastro-intestinal tract. It is therefore most effectively relieved by the administration of 'Merbentyl' Syrup, the new form of the antispasmodic 'Merbentyl'. Strikingly free from the side effects usually associated with antispasmodic therapy, 'Merbentyl' Syrup is particularly suitable for administration to infants and children; especially as they enjoy its clean, clear taste.

'Merbentyl' Syrup is available in bottles of 4 and 20 Fl. oz.
'Merbentyl' Syrup with Phenobarbitone is also available, in the same sizes.

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sulphathiazole with the exceptionally effective vasoconstrictor 'Paredrinex' is of great value in acute infections.

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A reliable and convenient presentation of a highly efficient vasoconstrictor for the relief of congestion on all occasions.

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'Sulfex', 'Pendex', 'Paredrinex', and 'Benzedrine' are registered trade marks

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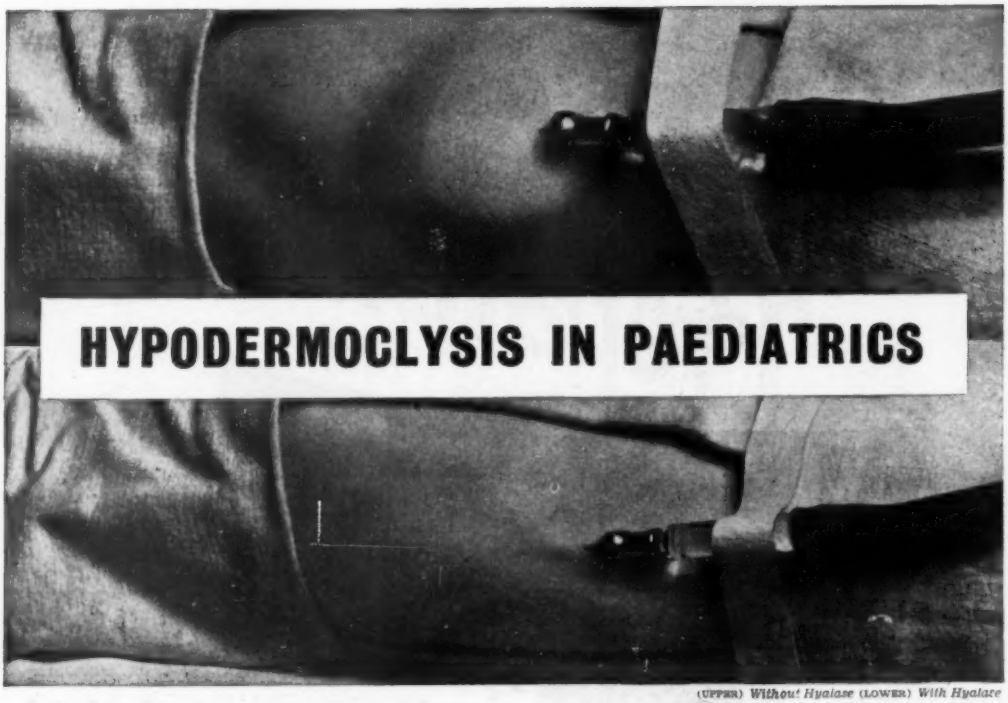

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(UPPER) *Without Hyalase* (LOWER) *With Hyalase*

INTRAVENOUS THERAPY may often be difficult owing to the inaccessibility of suitable veins or the restlessness of the child. Subcutaneous administration must be undertaken.

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A clear case for HYALASE

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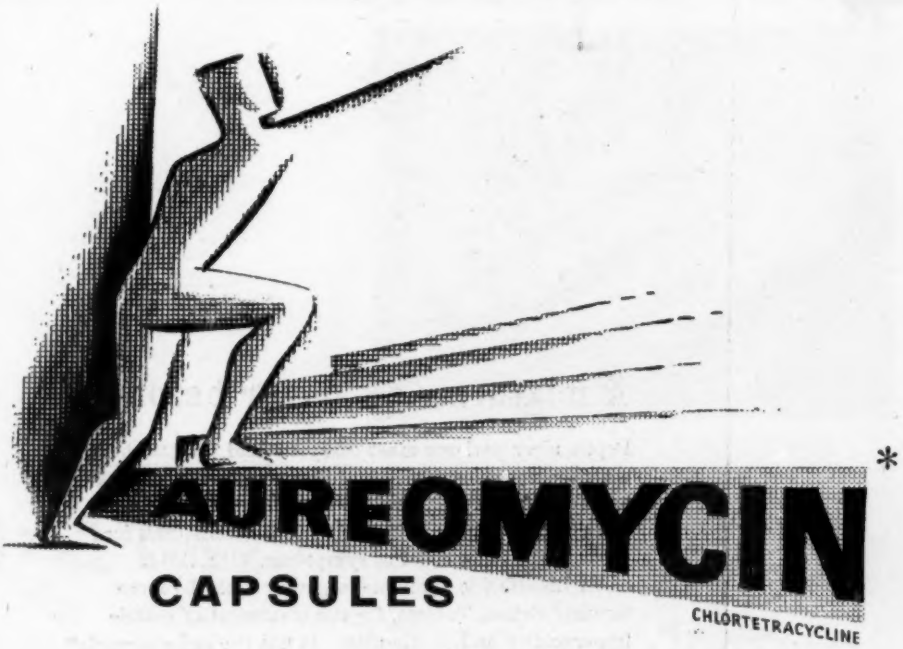

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General practitioners can *depend* on Aureomycin Capsules to secure prompt and effective concentrations of the antibiotic in the tissues. That is why this convenient and oral therapy is so often the only step needed to control many of the infections met with in everyday practice.
This form of therapy with Aureomycin is particularly economical as the Capsules are effective in remarkably low dosage... a typical *therapeutic* dose for adults being only four 250 mg. capsules daily.

AUREOMYCIN *Capsules*

50 mg. Bottles of 25 and 100
250 mg. Bottles of 16, 100 and 1000

AUREOMYCIN is also available as :—
DENTAL CONES · DENTAL PASTE · INTRAVENOUS‡ · NASAL · OINTMENT · OPHTHALMIC · OPHTHALMIC OINTMENT · ORAL DROPS · OTIC · SOLUBLE TABLETS · SPERSOIDS* *Dispersible Powder* · SYRUP · TROCHES · VAGINAL POWDER

* *Trade Mark* ‡ *At present available only to hospitals.*

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WHEN IT'S A CASE OF INFECTION... LOOK FIRST TO AUREOMYCIN

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19

A mixture – as never before

Peptic ulcer patients must carry antacid tablets about with them on their daily journeys — but they also like to have a bottle of antacid *mixture* for use at home. They can now do this and still rely on GELUSIL for quick and lasting relief of symptoms. GELUSIL SUSPENSION is available, together with the more familiar Gelusil Tablets, for the treatment of gastric hyperacidity and peptic ulcer. It has the same formula* and all the advantages of the tablets — and is pleasant to the taste as well.

**Formula:*
In each teaspoonful — 7½ grains magnesium trisilicate in combination with 6.5% aluminium hydroxide gel.
Dose:
2 teaspoonfuls between meals.

Packing:
Bottles of 6 fl. oz. Also available in bottles of 6 fl. oz. for dispensing only at 3/- each (minimum 6 bottles in container) not subject to P.T. on prescription.

GELUSIL
suspension

WILLIAM R. WARNER & CO. LTD., Power Road, London, W.4.

BUTAZOLIDIN

Regd Trade Mark

in osteoarthritis

Butazolidin in small doses has been found effective in the majority of cases of osteoarthritis. Relief from pain is usually experienced within a few days of commencing treatment and improvement in mobility of an affected joint is often of a greater degree than can be accounted for by analgesia alone. Osteoarthritis of the hip is particularly responsive to treatment with Butazolidin.

Prescribable on N.H.S. Form E.C.10. Butazolidin is included in schedules 1 and 4 of the Poison Regulations. Available in tablets containing 100 mg. and 200 mg. and in solution for injection in ampoules of 5 ml. containing 1000 mg.

Detailed literature is available on request.

Geigy

PHARMACEUTICAL LABORATORIES GEIGY LIMITED.

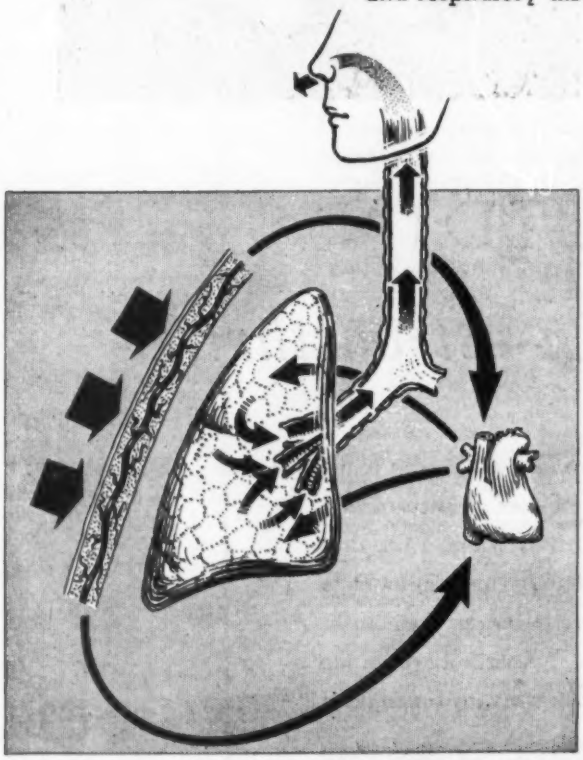
Rhodes, Middleton, MANCHESTER

PH 68

21

A NEW ADJUVANT IN THE TREATMENT OF RESPIRATORY DISORDERS

Lloyd-Hamol Ltd., of London and Zurich, presents to the medical profession a new decongestive salve, Thoracin, for the symptomatic relief of coughs, colds and respiratory disorders.



This diagram shows how Thoracin components penetrate the skin, are carried by the bloodstream to the alveoli and excreted there to exert their effect.

FORMULA

Phenyl Ethyl Nicotinate	2.0% w/w
Guaiacol Furoate	5.0% w/w
Tetrahydrofurfuryl Salicylate	10.0% w/w
Camphor	3.0% w/w
Eucalyptol	2.0% w/w
Water-Miscible Base to	100.0%

▶ The Thoracin formula is based on the same principles that have made Transvasin so successful in the treatment of rheumatic conditions.

▶ Thoracin is composed of esters of substituted hydroxy aromatic derivatives.

▶ Thoracin achieves the effect of the classic counter-irritant remedies — poultices, plasters and cupping — without irritation of the skin.

▶ Thoracin contains a new ester of Guaiacol that is entirely free from the evil smell and irritant effect associated with this phenol derivative in its pure form. This ester easily penetrates the skin, and is excreted in the alveoli, where it exerts its well-known action.

▶ Thoracin ensures vasodilation of the superficial skin vessels by the use of esters of nicotinic acid.

▶ Thoracin relieves reflex spasm of the pectoral muscles by the use of the tetrahydrofurfuryl-ester of salicylic acid.

▶ Thoracin brings to the alveoli via the blood stream the sedative, antispasmodic, and expectorant properties of camphor and eucalyptus.

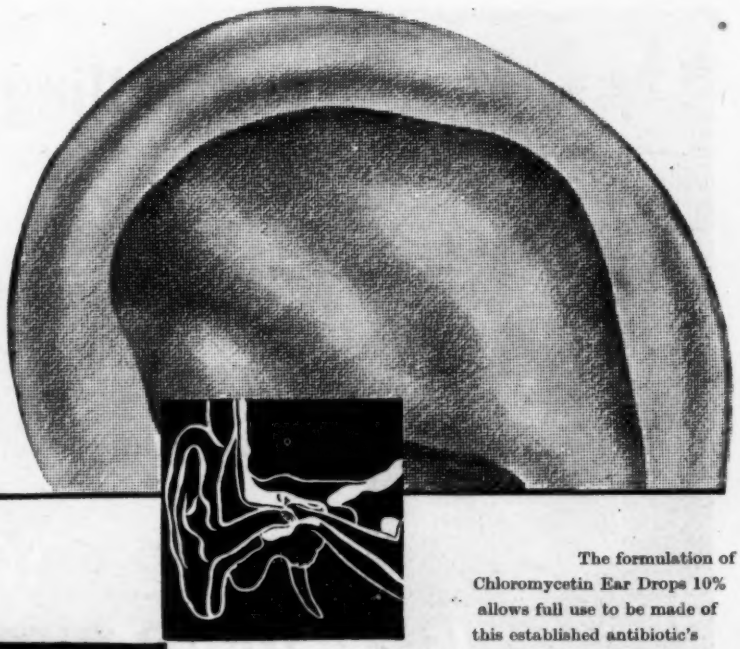
THORACIN is available in 1 oz. tubes — basic price 2/6 plus 7½d. P.T. It is an ethical product, and is not advertised to the public. Since a very small quantity is sufficient for each application, the cost of treatment is extremely low. *Samples and literature will be gladly sent on application.*

LLOYD-HAMOL LTD.
11 WATERLOO PLACE, LONDON S.W.1
AND AT ZURICH

Thoracin is the registered trade mark of Lloyd-Hamol Ltd.

THORACIN

MADE BY THE MANUFACTURERS OF TRANSVASIN



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ear drops 10%

in the treatment of
EAR INFECTIONS

The formulation of Chloromycetin Ear Drops 10% allows full use to be made of this established antibiotic's remarkably wide range of bactericidal activity. Chloromycetin Ear Drops 10% are advocated in the treatment of chronic otorrhœa, suppurative otitis media and infections of fenestration and mastoid operation cavities.

REFERENCES:

"Treatment of Chronic Otorrhœa and Chloromycetin"
Brit. Med. J., 2:939, 1951

"Local Application of Chloramphenicol"
Lancet, 2:268, 1951

CHLOROMYCETIN EAR DROPS 10%
(*chloramphenicol B.P. 10% in propylene glycol*)
supplied in 5 c.c. vials, and bottles of 100 c.c. with dropper

Parke, Davis
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HOUNSLOW, MIDDLESEX
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380

controlling oedema

more safely...
more simply...
ORALLY

The introduction of DIAMOX* Acetazoleamide has brought a truly radical advance in the control of cardiac oedema. This remarkably non-toxic diuretic is given by mouth and, in about eighty per cent of cases, *entirely* eliminates the need for parenteral measures. DIAMOX is not a mercurial or xanthine derivative; it produces diuresis by inhibiting the enzyme carbonic anhydrase. It is well suited for long-term therapy because—if used in the dosage suggested—it can be taken for an indefinite period without cumulative toxic effect. Following a single morning dose of DIAMOX, a copious diuresis of 6 to 12 hours' duration results. It allows the patient to enjoy an undisturbed night. Moreover, DIAMOX permits of *steady* control of the oedema—patients do not show the fluctuations in fluid and weight which characterise intermittent treatment with mercurials.

a completely new approach to diuresis

DIAMOX* ACETAZOLEAMIDE *Lederle*

Lederle

Packing: scored tablets of 250 mg. Bottles of 25 and 100.

* Regd. Trade Mark

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Busy B12

NOWADAYS particular interest is centred around vitamin B_{12}—not only on account of its specific action in pernicious anaemia (that, of course, is undoubted), but because it appears to be of marked benefit in other spheres. B_{12} has, in fact, brought prompt—sometimes dramatic—results in trigeminal neuralgia. The vitamin has also been used with good effect in herpes zoster, osteoarthritis and osteoporosis, seborrhoeic dermatitis and certain neuropathies such as those resulting from alcoholism and malnutrition. Moreover, B_{12} therapy is frequently followed by a marked improvement in appetite, vigour and well-being—indeed for this "tonic" effect, a few doses of 50 micrograms every second day usually suffice.

CYTAMEN TRADE MARK GLAXO

crystalline vitamin B_{12}

20, 50, 100 and 250 micrograms per cc. in boxes of 6; 1,000 micrograms per cc. in boxes of 3.

GLAXO LABORATORIES LIMITED, GREENFORD, MIDDLESEX, ENGLAND.

Research Laboratories: Manufacturers of medical products and foods. Agents or associate companies in almost every country in the world.

for

Motion Sickness

treatment or prophylaxis

The value of ' Dramamine ' in the prophylaxis and treatment of all forms of motion sickness has now been clearly established. Side effects are so slight that ' Dramamine ' may confidently be prescribed for all travellers by land, sea or air to enable them to undertake their journeys happily and well. ' Dramamine ' is also beneficial in the symptomatic control of nausea and vomiting due to pregnancy, electro-convulsive therapy, narcotisation and certain drugs (antibiotics, etc.).

SEARLE

Dramamine*

TABLETS

Brand of dimenhydrinate

The therapeutic efficacy of ' Dramamine' also extends to Ménière's Syndrome, irradiation sickness, the vertigo of hypertension, fenestration procedures and labyrinthitis. ' Dramamine ' is valuable in treating vestibular dysfunction after streptomycin therapy. It may be administered orally and rectally, and dosage may be continued over long periods if necessary. ' Dramamine ' is supplied as 50 mg. tablets, in bottles of 12, 36 and 1,000 and in strips of 100 tablets.

Literature on request.

* TRADE MARK.

SEARLE

Ethical Pharmaceuticals since 1888

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A new cough specific

(Sodium 2:6 ditertiarybutylnaphthalene Monosulphonate)

suppresses cough with no undesirable side-effects

SODIUM 2:6 ditertiarybutylnaphthalene Monosulphonate (Becantyl), a product of original research, is a new agent that is specific in suppressing cough. It is unrelated to morphine and guaiacol.

BECANTYL does not cause constipation, anorexia, drowsiness or any undesirable side-effects; being devoid of side-effects BECANTYL may be prescribed for infants, children, and the aged.

Clinical experience supports the value of BECANTYL in suppressing all types of cough, and shows that it does not suppress expectoration.

BECANTYL may be used in the treatment of all types of cough. There are no contra-indications to its use.

BECANTYL is presented in 4 fluid ounce, 40 fluid ounce, and 80 fluid ounce bottles.

Samples and literature on request

BIBLIOGRAPHY

Contribution a l'étude pharmacologique et toxicologique du butylnaphtalène sulfonate sodique ou L 1633.
Arch. int. Pharmacodyn 1954, **97**, 34

D'un nouveau sédatif de la toux.
Thèse de doctorat, Paris, June 1952

Bécantex in der Behandlung des Hustens bei Tbc-Patienten.
Praxis 1953, **42**, 974

La toux et son traitement symptomatique.
Semaine des Hôpitaux 1953, No. 60, 2999

Arch. f. exp. Pathol. u. Pharmakol 1940, **194**, 621

Proc. Soc. exp. Biol. u. Med. 1952, **81**, 463

A propos des sédatifs de la toux.
Revue du Praticien 1954, No. 7

Becantyl

HORLICKS LTD. PHARMACEUTICAL DIVISION
SLOUGH, BUCKS.

BECANTYL *is the Registered Trade Mark of the Société des Laboratoires Labaz*

For severe, intractable hypertension

RAUWILOID + HEXAMETHONIUM

brings a degree of safety hitherto unknown with hexamethonium therapy.

LESS FLUCTUATION · FEWER SIDE-EFFECTS
FULL THERAPEUTIC RESPONSE FROM LOWER HEXAMETHONIUM DOSAGE

"This therapy resulted in a greater number of patients obtaining a reduction in blood pressure than that from any single drug or combination of drugs previously reported from this investigative center".

Amer. Heart J. (1953), **46** : 754.

Tablets each containing; 1 mg. of 'RAUWILOID' brand alkaloid hydrochlorides of Rauwolfia serpentina.
250 mg. of hexamethonium chloride dihydrate.

Bottles of 100 and 500 tablets.

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Registered Users of the Trade Mark "RAUWILOID"

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in CHLORAMPHENICOL therapy

cinnamate and palatability

atropine and gastric intolerance

Chloramphenicol cinnamate, a new tasteless derivative of chloramphenicol, which leaves no residual bitterness on the tongue after oral administration, has been combined with atropine to form Alficetyn Suspension, a palatable preparation which has a wide range of therapeutic activity when given by mouth. Chloramphenicol cinnamate is hydrolysed in the alimentary tract releasing the parent substance chloramphenicol.

The small dose of atropine is included in the formula of Alficetyn Suspension for its spasmolytic effect. It greatly reduces the possibility of gastric intolerance and aids retention of the antibiotic.

Alficetyn Suspension contains in each teaspoonful (4 c.c.), chloramphenicol cinnamate equivalent to 125 mg. chloramphenicol B.P., and atropine sulphate 0·032 mg.

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CHLORAMPHENICOL CINNAMATE with ATROPINE

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The broadest-spectrum antibiotic for the wide range of infections encountered in General Practice.

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'Lergine' brand Tricyclamol Chloride, a new anti-cholinergic agent, markedly reduces gastro-intestinal motility and spasm, and diminishes gastric, pancreatic and intestinal secretions.

As an adjunct to the dietary treatment of peptic ulcer, 'Lergine' provides prompt relief of spasm and pain. In cases requiring added sedation 'Lergine' brand Compound, which contains tricyclamol and phenobarbitone, is advised.

'Lergine' has proved highly effective in relieving the pain and constipation associated with spastic or "irritable" colon, and is valuable in treating pylorospasm, ulcerative colitis, regional ileitis and some types of diarrhoea, for example that associated with pancreatic insufficiency.

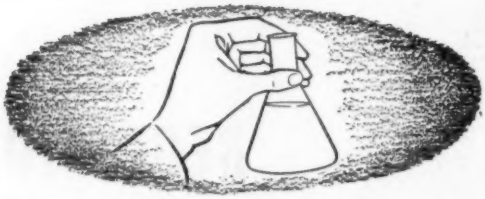
'Lergine' and 'Lergine' Compound are each issued in bottles of 100 and 500, the former at prices of 17/6d. and 80/-, and the latter at 19/6d. and 85/-, each subject to the usual discount.

'LERGINE'
TRADE MARK

'LERGINE' brand Tricyclamol Chloride, 50 mgm. compressed products.

'LERGINE' COMPOUND. Compressed products containing 50mgm. tricyclamol chloride and 16mgm. (gr.¼) phenobarbitone.

BURROUGHS WELLCOME & CO. *(The Wellcome Foundation Ltd.)* **LONDON**



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ELIXIR and TABLETS

In anxiety and allied states

Allays anxiety, apprehension and tension without clouding consciousness.

DOSAGE: *one tablespoonful of elixir or 2 tablets 3 times daily*

In rheumatic conditions

Its freedom from toxicity by the oral route makes it suitable for routine use.

DOSAGE: *one tablespoonful of elixir or 2 tablets 3 times daily*

Basic N.H.S. prices { 'MYANESIN' ELIXIR - 8 fl. oz. at 4/6
'MYANESIN' TABLETS - Bottles of 50 at 6/10

Each tablespoonful of Elixir contains 1 gramme of mephenesin. The tablets each contain 0.5 gramme

Literature and specimen packings are available on request

THE BRITISH DRUG HOUSES LTD. (Medical Department) LONDON N.1

MYN/E/541

CORRELATION OF RADIOLOGICAL AND PATHOLOGICAL CHANGES IN SOME DISEASES OF THE LUNG*

J. GOUGH
M.D. Wales
PROFESSOR OF PATHOLOGY, WELSH NATIONAL SCHOOL OF MEDICINE, CARDIFF

FOR several years I have been using paper-mounted sections of lungs, with the particular aim of comparing the morbid anatomical changes with the radiological changes found during life.

The technique of cutting sections of whole organs is quite old. It was used by Richard Muir in 1884. His sections were mounted on glass, and specimens of the technique still exist in the pathology department at Edinburgh University. There are similar ones in the department of pathology at Cambridge where they were used by Professor Sims-Woodhead. The method was apparently not extensively employed, and even when revived and modified by Christeller in 1924 it did not become widely popular. The preparations were first used for the demonstration of changes seen by naked eye, but about 1924 the method was modified by T. C. Dodds for the preparation of large sections thin enough to be suitable for microscopy. This is the method adopted, for instance, by Cheatle and Cutler (1931) for investigation of carcinoma of the breast.

The method now used (Gough and Wentworth 1948) has two original features: the sections are mounted on paper and not on glass, and certain glycol derivatives are used to preserve the natural colours. Staining is thus unnecessary, although stains can be used for special purposes such as the demonstration of hæmosiderin by the prussian-blue technique. These paper-mounted sections are now being produced in many centres in Britain and abroad and their popularity is probably due in part to the simplification of the technique but mainly to the ease and convenience of handling and storing paper preparations as compared with glass. The sections can be stored like other paper and those which I have kept in book form have not deteriorated during the eight years since the technique was started. The sections can be conveniently filed with the corresponding radiographs. Since many sections can be obtained from a block of tissue they form a convenient medium of exchange between centres working on similar problems.

My primary object was to collect a large number of sections of lungs from coalminers in order to interpret the radiological appearances of pneumoconiosis, but I shall here speak principally of other conditions which have been investigated in the same way.

Mitral Stenosis

Considerable interest is shown at the present time in the pulmonary changes associated with mitral stenosis, because these lung changes undoubtedly contribute to the dyspnœa. The punctate picture due to hæmosiderin in the lungs is a familiar one, and large sections show clearly the distribution of the pigment which produces the radiological shadows. More dense opacities and rather larger ones may be seen particularly in the lower lung fields. Some have described the two types of shadow as representing different degrees of hæmosiderosis (e.g., Sahn and Levine 1950), but anatomically it is seen that the dense shadows correspond with areas of ossification. The cause of these is not known, but their recognition in radiographs is of some importance because they may otherwise be mistaken for foci of tuberculosis.

In some cases of mitral stenosis the lung fields show linear markings particularly in the lower parts, where a series of parallel lines run in from the chest wall above the costophrenic angles. Sometimes these are very sharply outlined and about a millimetre in thickness. When I have asked some of my radiological colleagues what they represent, they say they are Fleischner's lines and that they represent areas of plate-like atelectasis. It is true that Fleischner described such areas of atelectasis, but these produce much wider and often longer areas of radio-opacity; and no-one more than Fleischner (1954) was puzzled by these thin lines in mitral stenosis, which he was sure were not due to atelectasis, although for many years he could not find an anatomical explanation. It was from a study of paper-mounted sections that he obtained the solution. When examining some of the preparations of coalminers' lungs which had been prepared in my department he was attracted by the deposition of coal in the septa between the secondary lobules, and he noted that in some cases of mitral stenosis hæmosiderin had a similar distribution and that this deposition corresponded with the position of the lines in the radiographs. The large sections of lungs of coalminers are indeed very helpful in delineating some of the anatomical features in the lung. In the majority of coalminers the bulk of the dust collects towards the centres of the secondary lobules, especially in relation to the terminal and respiratory bronchioles (Heppleston 1953); but some of the dust accumulates in the lung septa, and in a small proportion of miners this is the main site of deposition. Likewise with hæmosiderin, in most lungs it is in the form of foci in the centres of the lobules, but in some it is mainly in the septa.

Fleischner believed that not all the lines in mitral stenosis radiographs were due to hæmosiderin: he thought that some might be due to œdema of the interlobular septa, but he did not have material to show this. I have, however, obtained sections corresponding with radiographs taken during life to show this appearance, which consists in œdema of the connective tissue of the septa together with marked distension of the lymphatics. This type of line is often transient in radiographs, being present during periods of cardiac failure, but disappearing when there is recovery from the œdema. It will be interesting to see whether the persistent lines due to hæmosiderin disappear after successful valvotomy.

Microlithiasis Alveolaris Pulmonum

The need for careful correlation of radiological and pathological findings is illustrated by the following example.

In Shanks and Kerley's *Textbook of X-ray Diagnosis* (1951) is a radiograph said to be of gross chronic hæmosiderosis of the lungs in a woman of 56 with mitral stenosis. The lungs were intensely radio-opaque. The diagnosis was based on biopsy material obtained by needle puncture. This woman has since died, and an account of the post-mortem findings is given by Sharp and Danino (1953). The lungs were of very unusual appearance. The cause of the radio-opacity was the development of calcispherites and bone in the lung, a rare condition which has been described previously in German literature under the title—microlithiasis alveolaris pulmonum (Leicher 1949). The amount of hæmosiderin in the lungs of Sharp and Danino's case was small. When sections of the lungs were mounted on paper they felt exactly like sandpaper; the material, however, had not been inhaled but was endogenous and composed of calcium phosphate and calcium carbonate. The association with mitral stenosis may well have been fortuitous, for other cases described have not had associated heart-disease.

* A paper read before the Midland Tuberculosis Society on Nov. 6, 1954.

In several radiological centres in this country and in the United States this condition had not apparently been encountered, but I had an interesting experience in one U.S. centre when I showed the radiograph at a seminar. Although none of those present knew of microlithiasis alveolaris pulmonum, one of them was able to go to the archives of the department and produce a similar picture which for many years had lain there labelled "? severe ossification in tuberculosis."

The memory of particular pictures is, of course, as great an asset to the radiologist as to the morbid histologist, and one wonders when a radiologist is puzzling over an unusual film whether he tends to think mainly of similar pictures he has seen before or whether he tends to think in terms of the underlying pathological change. Paper-mounted sections filed with the corresponding radiographs may provide a useful reminder of the morbid anatomy. In order to make headway in the correct interpretation of radiographs it is necessary to collect and store them so that they will be available when the pathological evidence is eventually obtained. Hospital committees discuss how long radiographs should be kept, and I am disturbed at suggestions of a limit of this or that number of years. In the study of a chronic disease like pneumoconiosis radiographs taken very many years ago are now proving of great value.

Emphysema

In the study of coalminers' lungs I have been interested not only in the deposition of dust but also in the emphysema that results. It has been shown (Gough, James, and Wentworth 1949) that the simple postero-anterior radiograph is not a reliable means of assessing the degree of focal emphysema which occurs in coal workers, and indeed that type of radiograph appears to be unreliable in the diagnosis of emphysema of all sorts. Knott and Christie (1951) have shown the inaccuracy of postero-anterior radiographs in the diagnosis of emphysema.

Such diagnosis can be made more accurate with radiographs taken in inspiration and expiration and both postero-anterior and lateral; but even if accuracy in deciding the presence of emphysema were obtainable in this way that is only part of the answer. What sort of emphysema is it? I have compared the lungs of people dying from the emphysema associated with chronic bronchitis with those dying in status asthmaticus. I understand that radiologically chronic bronchitis and asthma do not show two distinct types of radiotranslucency, but anatomically the changes in the two are quite different. Of a consecutive series of 17 cases of fatal status asthmaticus, bullous emphysema was present in only 1, and in this case there was associated severe bronchiectasis. In the other cases the lungs were simply over-distended just like those of a person drowned. Indeed, it seems to be the most commonly accepted view that death in status asthmaticus is a form of drowning due to the tenacious mucus which the asthmatic cannot expel. There was, however, no breakdown of the lung tissue to form bullæ, which is in striking contrast to the emphysema of chronic bronchitis. The importance of this seems to be that the inflation of the lung in asthma is a reversible condition, whereas the destructive processes in the lung of chronic bronchitis seems to be permanent. Lodge (1946) has shown that the appearance of the blood-vessels in radiographs in emphysema is different from that in asthma, but otherwise the appearance in lung fields is similar in the two conditions. With chronic bronchitis and emphysema as one of the more important causes of death and morbidity, it is important that more should be learnt about it and there is need of radiological technique to help in distinguishing various forms of emphysema and to show at what stage destructive processes take place.

Uræmic Œdema

Œdema of the lungs produces various appearances in radiographs, and one of the more interesting is the central œdema which occurs in uræmia, giving the "butterfly" appearance. The histological description of the condition has been given by Doniach (1947). Recently, Herrnheiser and Hinson (1954) have investigated the gross anatomy of this condition, using paper-mounted large sections. They were able to show clearly the distribution of the œdema. They described the anatomical distribution of the lesion and related it to the conception of the lung anatomy according to which each lobe is divisible into a lobar root, a medulla, and a cortex. They found that the œdema in this condition is limited to the medullary part. These investigations and those of Prichard, Daniel, and Andran (1954) open up the possibility of explanation of some of the puzzling findings which emerge when the circulation in the lung is disturbed in man and in laboratory animals.

Tuberculosis

I have not used the technique for any research investigation into tuberculosis apart from coal workers, but have prepared large sections for some centres where the excision of lung is carried out. The method is not suitable for small segments, because expansion of the lung is required to obtain satisfactory results. When a lobe or a whole lung is removed, however, the preparations have been quite satisfactory. They can be filed with the radiographs and may be of value when the results of a large series of cases are being assessed. Where very detailed study is required, serial sections of several blocks of tissue may be used. In this way it can be shown at least how much diseased and how much healthy tissue has been removed. The sections show very effectively whether bronchiectasis is associated with the tuberculosis, and so may help in deciding why some cases do well and others not so well.

When I first demonstrated the paper-mounted sections about eight years ago, doubt was expressed whether they could do much for research, because they dealt with the outmoded field of morbid anatomy. I hope the examples given show that the researches have been in some measure profitable, and that the very large collection of lung sections that we have built up has served, and will continue to serve, as valuable material both in pathological and radiological studies.

REFERENCES

Cheatle, G. L., Cutler, M. (1931) Tumours of the Breast. London.
Christeller, E. (1924) *Virchows Arch.* **252**, 783.
Doniach, I. (1947) *Amer. J. Roentgenol.* **58**, 620.
Fleischner, F. G. (1954) Personal communication. See also Fleischner, F. G., Reiner, L. (1954) *New Engl. J. Med.* **250**, 900.
Gough, J., James, W. R. L., Wentworth, J. E. (1949) *J. Fac. Radiol., Lond.* **1**, 28.
— Wentworth, J. E. (1948) *Proc. 9th int. Congr. industr. Med. London*; p. 661.
Heppleston, A. G. (1953) *J. Path. Bact.* **66**, 235.
Herrnheiser, G., Hinson, K. F. S. (1954) *Thorax*, **9**, 198.
Knott, J. M. S., Christie, R. V. (1951) *Lancet*, i, 881.
Leicher, F. (1949) *Zbl. allg. Path. path. Anat.* **85**, 49.
Lodge, T. (1946) *Brit. J. Radiol.* **19**, 77.
Prichard, M. M. L., Daniel, P. M., Andran, G. M. (1954) *Ibid*, **27**, 93.
Sahn, S., Levine, I. (1950) *Arch. intern. Med.* **85**, 483.
Shanks, S. C., Kerley, P. (1951) Textbook of X-ray Diagnosis. London; vol. ii, p. 180.
Sharp, M. E., Danino, E. A. (1953) *J. Path. Bact.* **65**, 389.

"... too often the youth organisations ... failed signally to recognize the great weight that 'modernity' carries in the average artisan home, symbolizing as it does those things that the working class family of the past was only able to achieve by great self-sacrifice or by a fluke. 'Modern' was so vital a word to these boys and girls, and to most of the adults of their world, that it behoves any unit which professed to teach the good life to appear up-to-date itself. In so far as the youth organisations' activities did not sound fashionable ones, in so far as its set-up was authoritarian and by implication old-fashioned, and in so far as its physical setting was slovenly, the unit lost respect."—PEARL JEPHCOTT, *Some Young People*. London, 1954; p. 128.

TREATMENT OF ACUTELY PERFORATED PEPTIC ULCERS

RADIOLOGICAL DIAGNOSIS OF SITE OF PERFORATION

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With illustrations on plate

THE purpose of this paper is to recount the experience, results, and conclusions of one surgeon in the treatment, by different methods, of perforated peptic ulcers; and to describe a radiological technique to diagnose the site of perforation.

This series consists of 125 patients, of whom 65 were treated by aspiration, 45 by simple suture of the perforation, and 15 by immediate partial gastrectomy. Those treated by aspiration and those treated by simple suture were unselected: aspiration was used for all patients admitted to the beds of Prof. P. J. Moir in the last three years, and simple suture for all patients in the beds of those surgeons who regarded it as the method of choice. The immediate partial gastrectomies, however, were a carefully selected group admitted to the service of Prof. Digby Chamberlain.

The Conservative, Non-operative, or Aspiration Treatment

Many good accounts of the management and progress of patients treated in this way have been given (e.g., Hermon Taylor 1946), but a few points need to be elaborated.

The dose of morphine must be large (gr. $^1/_2$ for men, gr. $^1/_3$ for women intravenously) to produce comfort and free respirations. Only one dose is given unless the surgeon in charge of the case expressly orders otherwise.

Suction is done with a no. 11 œsophageal tube and by the simple three-bottle method (fig. 1). A large tube is necessary because the stomach contents are often glairy and thick, and the suction must be continuous so as to remove the fluid and *gas* as they collect—especially the air which these patients swallow. This seems to be important, for Hermon Taylor (1951) had 2 patients, and Heslop et al. (1952) 1, who continued to leak air into the peritoneum and died (these workers used intermittent suction only). It is, of course, important to make sure that the tube is in the dependent part of the stomach, either by changing its position until it is working well or by using a radio-opaque tube and X-ray control (figs. 2–5).

X rays are used as a diagnostic control (the special radiological diagnosis of the site of perforation is discussed below). 63% of cases showed free intraperitoneal gas, sometimes a considerable amount (fig. 2) without altering the progress in any way. It has not been necessary to take frequent radiographs, as was done by Hermon Taylor (1951); progress is judged clinically.

RESULTS

65 patients were treated conservatively. The diagnostic criteria are shown in table I and the results in table II. No case has been included where there was any doubt about the diagnosis. The average time in hospital was fifteen days; 58 patients made an uninterrupted recovery; 2 were started on the conservative method but were sutured some hours later; 2 had a subphrenic abscess; and 3 died (4·6%).

2 patients with early perforations had their treatment changed (at nine hours and at twenty-four hours) because continuing pain and rigidity suggested that the ulcers were not sealed, despite the patients' excellent general condition; but at operation the perforations were found to be closed. There was a small local collection of fluid, gas, and fibrin in the region of the hole and above the right lobe of the liver, but the intestines were clean and shining, and there was no apparent cause for the persistent pain and rigidity. The time on conservative measures did not affect their progress in any way.

2 patients developed a subphrenic abscess. The first, with a fifteen-hour perforation, formed an abscess directly, which was drained: he was in hospital two months. The second had an eleven-hour history, did very well on conservative treatment, and was discharged in seventeen days. It was known that he had persistent subphrenic gas and fluid, but previous experience had shown that these are usually absorbed. In his case, however, this did not happen, and he was readmitted twelve days later, when the abscess was drained. He was in hospital for a total of two months.

Subphrenic gas, often with a fluid level, was present in 63% of patients. It is almost always absorbed without incident, even when present in large quantities (fig. 2). As serial radiographs were taken in only a few cases

Fig. 1—Three-bottle continuous-suction apparatus.

The bottles are the ordinary litre saline bottles. It is important to have the long down-tube under water in the lower bottle; otherwise the water runs out. When the top bottle is empty, it is simply changed with the bottom one; but it is necessary to clip the in and out tubes near the top bottle when changing; otherwise the negative pressure in the system is lost and half a bottle of water runs out to regain it, leading to frequent changing (hence the Spencer Wells forceps hanging on the drip stand). All glass connections between the patient and the first bottle must be wide: the rest do not matter.

A sterile syringe, adaptor, and saline solution are ready to syringe through the stomach-tube if it does not run properly, and the nurses must realise that it should run each time a test drink is given; and that a flow in the system occurs with aspiration of wind as well as fluid, and that this is not to be hindered by cutting down the flow in the system with control screws.

it is not possible to say how long the gas usually remains; but it was present, with a fluid level in 6 cases for 8, 8, 12, 14, 20, and 29 days. These patients were well, with normal temperatures and leucocyte-counts, and cleared without interference; but this should not lead to over-confidence, as the second subphrenic abscess showed; and it would be wise to screen all perforations before discharge, to exclude an unrecognised or unresolving subphrenic collection.

3 patients died (4·6%). They were men aged 43, 73, and 33, with perforations of five, six, and fifteen hours respectively; and they were alike in all being ill on admission from the peritoneal effects of the perforation—

TABLE I—DIAGNOSTIC CRITERIA FOR NON-OPERATIVE TREATMENT OF PERFORATED PEPTIC ULCERS. PATIENTS WITH TYPICAL HISTORY AND PHYSICAL SIGNS

Free gas under diaphragm		No free gas but pain referred to shoulder		No free gas or shoulder pain but subsequent radiol. confirmation of ulcer	No gas or shoulder pain and no later radiol. proof
41	27 barium meal positive 7 barium meal negative 7 barium meal not done	6	4 barium meal positive 2 barium meal negative	13	5

2 with a low blood-pressure and rapid pulse but a short history, and 1 with a long history and beginning distension of the abdomen. A 4th patient should be considered here, who is included in the results of simple suture.

TABLE III—MORTALITY OF NON-OPERATIVE TREATMENT OF PATIENTS THOUGHT TO BE TOO ILL FOR OPERATION FROM PERITONEAL EFFECTS OF PERFORATION

Reference	Usual treatment of choice	No. thought unfit for operation	No. died
Gill and Jenkins (1950)	Conservative	3	3
Taylor (1951)	,,	4	4
Stead (1951)	,,	6	4
Seeley (1951)	,,	4	4
Heslop, Bullough, Brun (1952)	,,	5	5
Nuboer (1951)	Gastrectomy	3	3
Graham (1946)	Suture	2	2
Baritell (1947)	,,	1	1
Avery Jones et al. (1950)	,,	13	13
Vaughan and Warren (1951)	,,	2	2
Armitage (1954)	,,	13	13
Total	..	56	54

This was a woman, aged 69, whose ulcer had perforated only one and a half hours previously but who was considered too ill for operation, because of peripheral circulatory failure. She was treated conservatively *only* because she was so ill. She died in twenty-four hours.

THE BAD RISK

These 4 cases suggest that patients who are seriously ill from the effects of the perforation—i.e., with peripheral circulatory failure or with an infective generalised peritonitis—will die if treated conservatively; and this is supported by the fact that in 56 published cases of perforation (table III) in which the patient was thought to be too ill for operation, there were only 2 survivals.

It seemed to me, therefore, that such patients should be operated on and not treated by aspiration; and the following 3 cases were so treated with gratifying results.

TABLE II—RESULTS OF DIFFERENT TREATMENTS IN 125 PERFORATED PEPTIC ULCERS

Year	No. of cases	Age (yr.)	Sex		Time since perforation (hr.)	Site of perforation (at operation or from barium meal when done)			Results				Average days in hospital
			M	F		D.U.	G.U.	Jej.	Uninterrupted recovery	Complications	Died	Details of deaths	
Non-operative treatment:													
1951	17	26–69 (av. 44)	16	1	1–15 (av. 3½)	8	1	..	15	..	2	Male aged 43. D.U. 5-hr. perf. Male aged 73. G.U. 6-hr. perf. Both ill	15
1952	24	23–73 (av. 44)	19	5	½–26 (av. 5)	12	2	1	21	One case. Oper. after 9 hr. on aspiration. One subphrenic abscess in man, aged 52, with 15-hr. perf.	1	Male 33. D.U. 15-hr. perf. Ill	15
1953–54	24	25–66 (av. 42)	23	1	1½–48 (av. 7)	14	1	..	22	One subphrenic abscess in man, aged 58, with 11-hr. perf. One case operated after 24 hr. on aspiration	0	..	15
Total	65	Av. 43	58	7	Av. 5	34	4	1	58	4	3	..	15
Simple suture:													
1950	7	25–69 (av. 41)	5	2	Not stated	6	0	1	6	..	1	Female, aged 69, 1½ hr. perf. D.U. v. ill, not operated on	15
1951	19	27–65 (av. 47)	17	2	2–20 (av. 5)	16	2	1	17	Burst wound in man, aged 53, with 7-hr. perf. D.U.	1	Male, aged 63, with 20-hr. perf. D.U., died 8th day	14
1952	10	26–66 (av. 42)	6	4	1–12 (av. 4)	10	..	..	10	..	0	..	14
1953–54	9	33–75 (av. 51)	5	4	2–48 (av. 14)	6	3	..	7	One case of subphrenic abscess in female with 18-hr. perf. D.U. One case of pelvic abscess in man, aged 44, with 48-hr. perf. D.U.	0	..	20
Total	45	Av. 46	33	12	Av. 8	38	5	2	40	3	2	..	15½
Immediate partial gastrectomy:													
1950–54	15	24–70 (av. 43)	14	1	¾–7 (av. 3)	14	1	..	14	Postoperative pneumonia in 1 case	0	..	15

Case 1.—A man, aged 44, was sent to hospital with a diagnosis of acute retention of urine because he had passed no urine for twenty-four hours, and had abdominal pain and a suprapubic swelling dull to percussion. He had, in point of fact, a peptic ulcer which had perforated forty-eight hours before. The lack of urine was due to anuria, and the suprapubic swelling, which was present only when he sat up, was free peritoneal fluid; he was gravely ill, with unrecordable blood-pressure. He was given morphine gr. 1/3, put on continuous gastric suction and antibiotics, and given three pints of blood and two pints of dextran, which brought his blood-pressure to 100/70 mm. Hg. Laparotomy was done three hours after admission, the fluid was sucked out of the peritoneum, and the perforation was sutured. He recovered, and his postoperative course was not unduly difficult.

Case 2.—A woman, aged 51, with an eighteen-hour perforation, was gravely ill, with pulse-rate 124, blood-pressure 85/65, and a somewhat distended abdomen. She was given morphine and antibiotics, and put on continuous gastric

TABLE IV—MORTALITY AND MORBIDITY IN 2759 PERFORATED PEPTIC ULCERS

Reference	Years concerned	No. of cases	No. of deaths	Details of deaths		Morbidity	
				Where recovery was expected	Where death was expected	Severe	Probably less severe
Non-operative treatment:							
Bedford-Turner (1945)	..	6	0	..	..	Nil	..
Visick (1946)	..	14	2 = 14%	D.U., 7-hr. perf. operated after 5 hr. pneumonia G.U., continued leak	..	1 abscess (intraperitoneal)	..
Gill and Jenkins (1950)	..	24	5 = 20%	..	3 late perfs., very ill. 2 perfs. plus severe bleeding	Not given	..
Taylor (1951)	..	73	7 = 10%	2 air swallowers 1 pneumonia	3 late perfs., very ill. 1 severe shock	3 abscesses	..
Stead (1951)	..	50	5 = 10%	1 failed treatment	4 too ill for operation (3 G.U. 1 D.U.)	3 abscesses	..
Seeley (1951)	..	110	5 = 4·5%	1 failed treatment	4 moribund on admission	8 abscesses 4 pleural effusions 1 pneumonia 1 phlebitis	..
Heslop et al. (1952)	..	124	9 = 7%	1 air swallower 3 abscesses drained giving pancreatic fistulæ	5 late perfs., very ill (3 G.U. 2 D.U.)	3 abscesses	..
Present series	..	65	3 = 5%	1 D.U.—5-hr. perf.	2 very ill on admission	2 abscesses	..
Total	..	466	36 = 7·7%	12 failure of method in 466 cases = 2·6%	..	26 of 442 cases = 5·9%	..
Simple suture:							
Baritell (1947)	1944–47	88	2 = 2·3%	..	1 mitral stenosis and pulmonary œdema 1 man 63. Not operated. 2 or 3 days perf.	1 burst wound 4 abscesses 4 pneumonias	9 wound infections 3 lobar collapse of lung
Avery Jones et al. (1950)	1947–48	115	11 = 10%	2 from wound infection and chest troubles	2 from severe bleeding; 7 not operated on, too ill from perf. or medical state	Nil	42 chest troubles 8 wound infections
Vaughan and Warren (1951)	1944–49	81	3 = 3·7%	1 peritonitis	2 too ill for operation	Not given	..
Mage and Payson (1952)	1941–45	70	5 = 7·1%	Not given	Not given	7 pneumonitis 2 abscesses 7 wound dehiscence 1 duod. fistula	11 wound infections
	1946–50	97	7 = 7·2%	Not given	Not given	6 pneumonitis 3 abscesses 1 burst wound 1 duod. fistula	9 wound infections
Lassen (1952)	1947–51	60	4 = 6·7%	Not given	Not given	Not given	..
Heslop et al. (1952)	..	104	9 = 8·6%	3 short history died of peritonitis 2 short history—well—sudden postop. death. 1 long. reperf. on 13th day	1 man 50 auric. fibrillation. 1 man 61 G.U. 5-hr. perf. shocked. 1 man 27 D.U. 27 hr. 3 severe bleeding	1 burst wound 3 abscesses 1 incisional hernia	1 infected wound 9 paralytic ileus
Miller et al. (1953)	1942–51	88	17 = 17·5%	3 pulm. emboli 1 intest. obstr. 1 hydropneumothorax	4 heart-failure 4 peritonitis (pre-antibiotic) 1 carc. œsoph. with lung collapse	1 duod. fistula 5 phlebitis 3 pulm. emboli 3 pneumonitis 2 abscesses	13 wound infections
Beahrs et al. (1953)	1941–45	114	2 = 1·8%	1 perf. 5 hr.	1 perf. 30 hr. Male 62	Not given	Not given
Gilmour (1953)	1946–50	206	13 = 6·3%	None in young, early, acute ulcers. Mort. rose with age, length of perf., and history of ulceration		Not given	Not given
Present series	1950–54	45	2 = 4·4%	None	1 female 69, perf. D.U. 1½ hr. Shocked—not operated on. 1 male 63. D.U. 20 hr.	2 abscesses 1 burst abdomen	Nil
Total	..	1068	75 = 7%	15 of 633 cases = 2·4% Where method failed	..	59 of 607 cases = 9·7%	105 of 607 cases = 17·3%
Immediate partial gastrectomy:							
Yudine (1939)	1933–36	937	84 = 8·9%	Not given	Not given	Selected cases.	Morbidity not given
Toland and Thompson (1936)	1936	17	1 = 5·6%	Not given	Not given	Jejunal ulcers.	Morbidity not given
Strauss (1944)	1941–42	12	2 = 17%	1 male 45. Perf. 7 hr. 1 male 38. Perf. 5 hr.	Nil	Selected cases.	Morbidity not given
Nuboer (1951)	1940–47	69	4 = 5·7%	Not given	Not given	..	..
	1947–51	65	4 = 6%	1 case. Details not given	3 moribund on admission. No operation	Unselected.	Morbidity not given
Lowdon (1952)	1952	41	0	Nil	Nil	Selected.	Morbidity not given
Carayannopoulos and Christopoulos (1952)	1952	69	2 = 2·9%	1 case where details not given. 1 male 72. Fit	Nil	Selected.	Morbidity not given
Present series	1950–54	15	0	Nil	Nil	Selected.	1 postoperative pneumonia
Total	..	1225	97 = 7·9%	5 of 202 cases = 2·5% Where method failed	..	..	..

suction. Two pints of blood were given, and the systolic blood-pressure rose to just above 100 mm. Hg in about an hour. Laparotomy was done, the peritoneum sucked clear, and the perforation sutured. She was given two more pints of blood and two pints of dextran, and her blood-pressure, which had fallen with the anæsthesia, rose to 110 mm. Hg and was maintained thereat. She was discharged well a month after admission.

Case 3.—A woman, aged 36, was admitted on March 24, 1954, with three days' severe abdominal pain. She was gravely ill, with cold extremities, respirations 28 per minute, pulse-rate 130–140, and systolic blood-pressure below 100 mm. Hg. Her abdomen was tender all over, distended, and silent; a diagnosis was made of generalised peritonitis with paralytic ileus, probably arising from a perforated peptic ulcer. She was given morphine and antibiotics and put on continuous gastric suction and intravenous dextran, and laparotomy was begun without waiting for the blood-pressure to rise. She was found to have generalised peritonitis, with much free bloodstained peritoneal fluid, arising from strangulation of a loop of jejunum. This was resected, and, after a further three pints of dextran, two pints of blood, and a litre of saline solution given rapidly, her condition improved and remained satisfactory. The postoperative course was singularly smooth, and she was discharged a month later.

This last case is included here partly because of the mistaken diagnosis but mainly because the woman was, by the usual criteria, much too ill for operation.

COMMENT

The above results of the conservative treatment indicate that

(1) The usual course is easy and without anxiety.

(2) Subphrenic gas and fluid are common (63%), but only in an occasional case are they not absorbed spontaneously. Nevertheless these collections must be watched with care.

(3) The patients who die are the ones who are ill on admission from the effects of the perforation. These are the cases generally and widely treated by aspiration (the "forced conservative" method) and are the very ones who should *not* be treated by this method.

Simple Suture

The preoperative and postoperative treatment of these patients is the same as that of those treated by aspiration, except that less morphine is given. The perforation was closed by simple transverse infolding, reinforced with an omental plug, and the peritoneal cavity was cleared of all free fluid. I would add that I have never seen the peritoneum full of beer and carrots, which the opponents of the non-operative method so picturesquely describe. Indeed, I have seldom been able to recognise stomach contents in the peritoneum.

RESULTS

As table II shows, 45 patients were operated on, and the average time in hospital was fifteen and a half days. 40 had an uninterrupted recovery; 1 patient burst his wound; 2 developed abscesses; and 2 died (4·4%).

The "burst abdomen" was in a man, aged 53, with a seven-hour perforation. There seemed to be no cause for this, and he recovered after resuture.

The 2 cases of abscesses are those I have already cited to show that peritoneal toilet and suture of the perforation offer the only chance of survival where the patient is gravely ill from the peritoneal effects of the perforation. Their perforations were of eighteen and forty-eight hours' standing, and both were desperately ill with gross peritonitis. Their abscesses resolved without operation, but they were in hospital for forty and thirty days.

The 2 patients who died were a man aged 63, with a perforation for twenty hours, and a woman aged 69, with perforation for an hour and a half; both had long ulcer histories. The man died in eight days from peritonitis. The woman was treated conservatively *only* because she was thought to be too ill for operation, and died within twenty-four hours (see above).

COMMENT

These results of simple suture of perforations indicate that

(1) The usual course is easy and without anxiety.

(2) From time to time complications arise which appear to be unavoidable, either because the cause is not apparent (e.g., the burst abdomen) or because the patient arrives too late (e.g., abscesses in late perforations).

(3) Some deaths seem at present to be unavoidable (e.g., the 8th-day death from peritonitis in a man who stood his operation well and whose perforation remained sealed but who could not cope with the infection, despite the use of antibiotics); and some deaths may well be avoided by bold measures (e.g., operation in patients desperately ill from the peritoneal effects of the perforation).

Partial Gastrectomy

Only patients who had perforated within eight hours and were in good condition were submitted to gastrectomy. Hence this group is highly selected.

Although patients with perforated ulcers are often stated to be "shocked," they have, apart from the neglected perforation (and the occasional early case), a normal blood-pressure and relatively slow pulse. This agrees with the findings of Estes and Bennett (1944).

For gastrectomy the preoperative and postoperative care is the same as for the patients treated by aspiration, but with two differences: (1) the preoperative morphine is less, and (2) gastric suction is not used postoperatively unless the patient vomits.

LEGENDS TO ILLUSTRATIONS ON PLATE

MR. MOORE

Fig. 2—Perforated duodenal ulcer.

The patient is erect and has been given viscous diodone 30 ml. and water 30 ml., showing very large amount of free intraperitoneal gas and retention of diodone in stomach. This patient was treated by aspiration and discharged home well in 14 days.

Fig. 3—Duodenal perforation.

Left radiograph, with patient erect, shows stomach and duodenal cap outlined and a little gas just above cap. Right radiograph, with patient supine, suggests leak of diodone into peritoneum (confirmed at operation).

Fig. 4—Prepyloric perforation.

Erect (left) and supine (right) films with viscous diodone 30 ml. and water 30 ml. Diodone has not passed into duodenum, and there is spasm of middle of stomach (at operation there was no abnormality at this site). Tube is curled back into fundus. Erect film shows no escape of diodone, but the supine film, taken 7 minutes later, shows escape of diodone headwards and to left of vertebræ from prepyloric perforated ulcer.

Fig. 5—Perforated gastric ulcer.

Ulcer is well outlined on lesser curvature just beside opaque tip of stomach-tube. Diodone fills pyloric region, but intermediate part of stomach is empty. Diodone has escaped into peritoneum and is lying near lower part of stomach and in left iliac fossa. The stomach-tube should go much further down.

Fig. 6—Normal.

Outpatient attending for barium meal, which proved to be normal. Viscous diodone 30 ml. and water 30 ml. have been given, outlining stomach, duodenal cap, and duodenum.

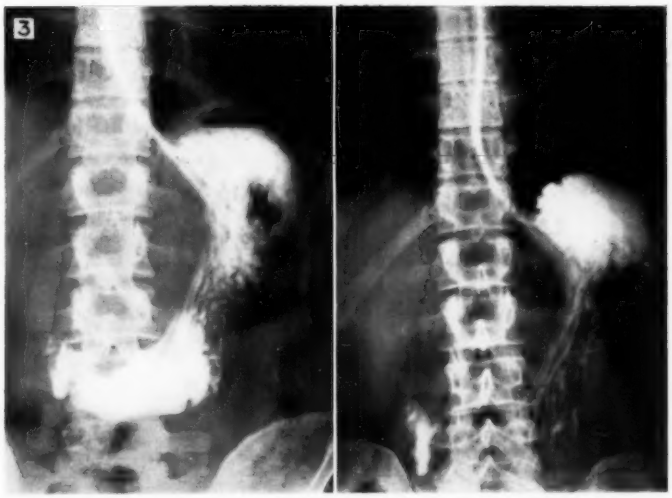
Fig. 7—Duodenal perforation.

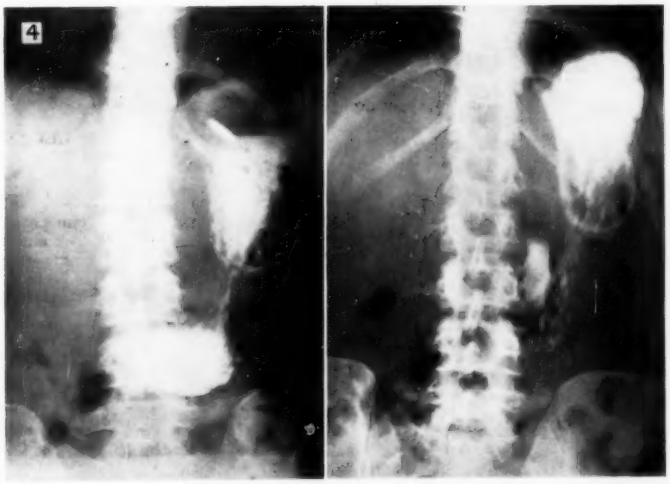
No tube has been passed. Patient has drunk viscous diodone and is supine. Stomach contains a good deal of fluid, and diodone is escaping through duodenal perforation and passing headwards towards a collection of air beside the vertebræ.

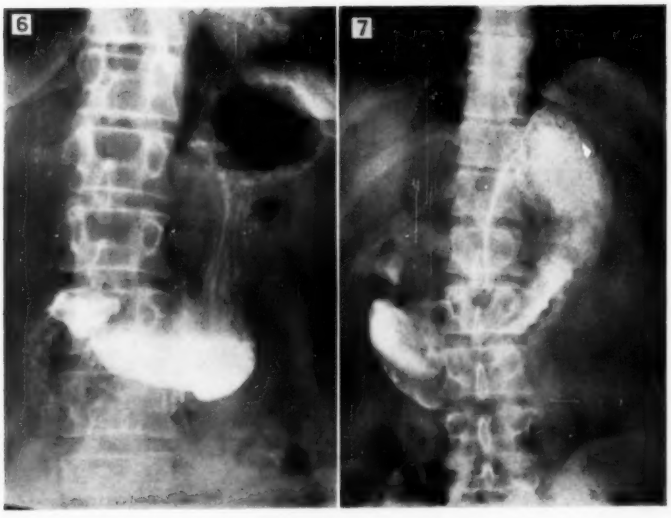
Fig. 8—Perforated duodenal ulcer.

Diodone in stomach and small bowel and leaking from duodenum; capped by air-bubble and spreading as far as 12th rib. Note gas under diaphragm, and left renal calculus.

MR. MOORE:
ACUTE PERFORATED
PEPTIC ULCERS

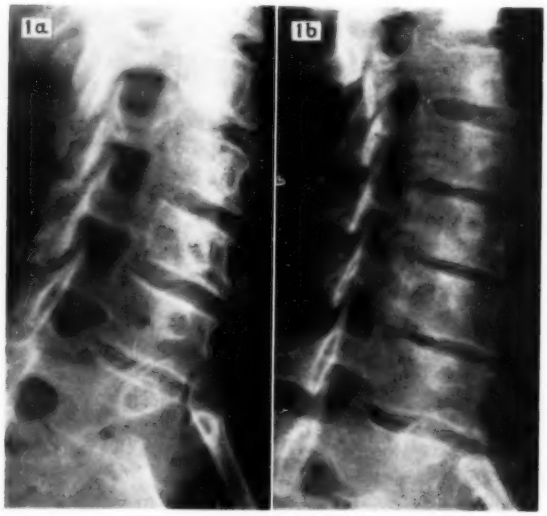




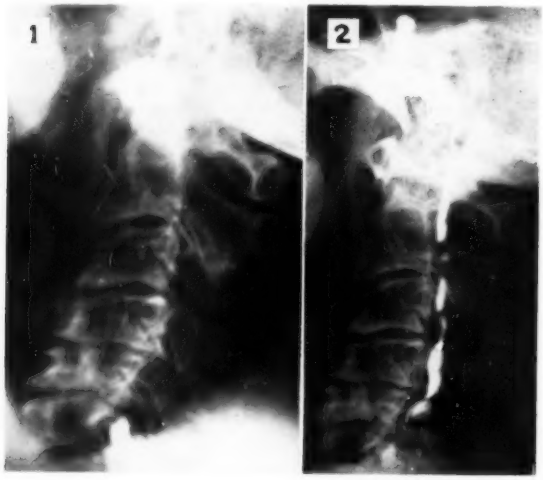


DR. HOLESH: TUMOURS OF THE GLOMUS JUGULARE

PROFESSOR CAVE AND OTHERS: OSTEO-ARTHRITIS OF LUSCHKA JOINTS



DR. CLARKE: CERVICAL MYELOPATHY



DR. TERRY: ONYCHODERMAL BAND

15 partial gastrectomies were done (table II). There were no deaths, and the striking features of these cases were the ease of the operation and the smooth post-operative course (apart from 1 patient who developed pneumonia).

Comparison of the Three Methods

In comparing the methods, we must consider in order of importance, the number of deaths, the complications, and the difficulties.

Deaths

The deaths can be considered in three groups: (1) where all the cases subjected to a particular method are included without regard to the state of the patient on admission; (2) the deaths which occurred with a particular method despite the fact that the patient was reasonably fit on admission and might have been expected to survive; and (3) the deaths among patients who were ill on admission either from shock in the early cases or from infective peritonitis in the late.

From the present series (table II) and from the previously published cases (table IV) the following figures emerge:

	Deaths among all admissions			*Deaths which took place when recovery might have been expected*		
	Cases	*Deaths*		*Cases*	*Deaths*	
Non-operative method	466	36	(7·7%)	466	12	(2·6%)
Simple suture ..	1068	75	(7·0%)	633	15	(2·4%)
Immediate partial gastrectomy ..	1225	97	(7·9%)	202	5	(2·5%)

The small numbers in the simple-suture and gastrectomy groups where unexpected deaths are considered, compared with the total numbers reported, are due to the fact that in many reports details of the deaths are not given.

The patients who were gravely ill on admission were usually treated conservatively (the "forced conservative" method). Table III shows that of 56 such patients 54 died. These figures do not include the patients who were ill from cardiac failure, bronchitis, &c., but only those who were in poor shape from their abdominal catastrophe.

The collected figures show, therefore, that the mortality as a whole and the mortality in reasonably fit patients do not differ appreciably whatever treatment is used, but that for ill patients the conservative method is lethal. Finally, almost all published series show that the mortality of gastric ulcers, whether treated conservatively or by simple suture, is many times greater than that of duodenal ulcers.

Complications

The complications can be considered as immediate and remote. Table IV shows that the serious immediate complications of aspiration treatment—such as intra-peritoneal abscesses—were 26 in 442 cases (5·9%), whereas in simple-suture cases there were 59 in 607 cases (9·7%). In addition the 607 simple-suture cases showed 105 (17·3%) lesser complications—such as wound sepsis and chest troubles—which did not occur in the conservative cases, making a total of 27%. No immediate complications are reported in the partial-gastrectomy series; but no doubt there were some, although the writers emphasise the smooth postoperative course.

As regards remote complications and troubles, collected series show that about half the patients who perforate will have subsequent severe symptoms (Sallick 1936, Estes and Bennett 1944, Illingworth et al. 1946, Forty 1946, Chamberlain 1951, Tandberg 1950, Lassen 1952, Gilmour 1953, Armitage 1954). It has also been shown that patients whose symptoms recur are usually those with a previous dyspeptic history (Illingworth et al. 1946, Gilmour 1953); and Lowdon (1952) showed histologically that a long history is likely to indicate a chronic ulcer. Finally, Doll (1950) found 8·1% of 86 perforated gastric ulcers in men to be carcinomatous within three years.

It therefore seems that, as regards immediate complications, simple suture is to be avoided. As regards remote morbidity, it seems equally clear that a long history of dyspepsia almost certainly means a recurrence of symptoms after the perforation is healed—and that a gastric ulcer is immediately and remotely dangerous.

Difficulties

Simple suture is familiar to everyone and needs no further mention.

Aspiration is often spoken of as time-consuming and worrying. It is no more time-consuming than a laparotomy, but it does mean that the surgeon must be readily available in case of difficulties.

Partial gastrectomy takes more time and may be impracticable for that reason.

Finally, if the surgeon is experienced and has a good anæsthetist he can choose his method at will. If not, he would be wise to avoid any operation.

Choice of Method

Patients may be divided into three groups:

(1) Those who are reasonably fit on admission—i.e., not shocked, without obvious infective peritonitis, and medically sound.
(2) Those who are ill from the effects of the perforation.
(3) Those who are ill from an associated medical condition.

For patients who are reasonably fit on admission, mortality is about the same for each method, and the choice of method should therefore depend on the morbidity, immediate or remote. As immediate complications are commoner with simple suture than with aspiration, aspiration should be preferred to suture. As between aspiration and gastrectomy, aspiration is preferable for patients with a duodenal ulcer who have no history of dyspepsia, or only a short history, and who are therefore likely to remain symptom-free after the perforation. But in patients with a long ulcer history, any treatment which leaves the ulcer in place will be followed by a recurrence of severe symptoms, and this can be prevented only by immediate partial gastrectomy. Finally, gastric ulcers treated either by aspiration or by suture have a high mortality compared with duodenal

LEGENDS TO ILLUSTRATIONS ON PLATE

DR. HOLESH

Fig. 1—Tomograph showing the characteristic erosion of the apex of the petrous bone.

Fig. 2—Carotid arteriogram showing the complex arteriovenous anastomoses at the base of the skull and neck.

Fig. 3—View of the base of the skull showing the nasopharyngeal part of a large glomus tumour.

DR. CLARKE

Fig. 1 (case 1)—Myelogram; lateral view, head down. Neck in full extension, showing complete block at C5-6.

Fig. 2—The same, with neck flexed. Radio-opaque material now passes the obstruction revealing filling defects.

PROFESSOR CAVE AND OTHERS

Fig. 1—(a) Normal cervical spine showing the capacious intervertebral foramina; (b) Luschka-joint osteo-arthritis showing protrusions of apophyseal osteophytes into four intervertebral foramina.

DR. TERRY

Fig. 1—Opaque onychodermal band in patient with thyrotoxicosis.

Fig. 2—Finger-nail of patient with hepatic cirrhosis, showing both opacity of the main pink zone ("white nails") and opaque onychodermal bands. (N.B. The longitudinal flaw interferes with the "white nail," but not with the opaque band.)

Fig. 3—Opaque onychodermal band associated with local desquamation following paronychia.

ulcers, and many prove to be carcinomatous. Hence immediate partial gastrectomy should be done for these also. They can be diagnosed preoperatively by the radiological method described below.

The patients who are ill on admission from the effects of the perforation are usually, though not always, the late perforations. It seems evident that partial gastrectomy is not to be considered. (Even Nuboer (1951), who does partial gastrectomy as a routine, had 3 patients whom he considered too ill for operation.) As already stated, I believe that simple suture, toilet of the peritoneum, and *vigorous* supportive measures offer the best chance of survival.

Lastly there are the patients who are ill on admission from an associated medical condition such as cardiac failure or severe bronchitis. I cannot produce figures to support my opinion; but it seems reasonable in these cases to avoid the added strain of an operation and anæsthetic. Aspiration is therefore likely to give the best results.

CONCLUSIONS IN BRIEF

Fit patients with either a long ulcer history or a gastric ulcer should be treated by immediate partial gastrectomy.

Fit patients with a very short previous history of dyspepsia, or no previous history, should be treated by aspiration.

Patients ill from the effects of the perforation should be treated by simple suture, toilet of the peritoneum, and vigorous supportive measures.

Patients ill from an associated medical condition should be treated by aspiration.

Radiological Diagnosis of Site and Size of Perforated Peptic Ulcer

Method

On admission the patient is treated in the usual way; but, instead of plain radiography of the diaphragmatic region for gas, 30 ml. of viscous diodone ('Viskiosol six') and 30 ml. of sterile water, or 40 ml. of 35% diodone, is squirted down the suction-tube, or drunk. Three radiographs are then taken: (1) with the patient erect (this is developed and viewed to see whether the exposure is correct, which takes about 10 minutes); a second with the patient erect; and the third (immediately after the second) with the patient supine.

Gastric suction is, of course, stopped while this is being done.

Results

57 patients have been radiographed in this way—19 with no stomach lesion, and 38 with a perforated peptic ulcer.

Of the patients with a perforation, 22 were operated on and 16 were treated by aspiration. The operated cases consisted of 19 duodenal ulcers, 2 prepyloric ulcers, and 1 gastric ulcer. The aspiration cases were probably all duodenal, but so far only 9 have been proved by radiography after a barium meal.

The stomach was surprisingly well outlined in all cases (figs. 2–8). When the patient was well and without abdominal pain (e.g., in routine outpatient radiography) the diodone passed rapidly into the duodenum and jejunum (fig. 6); but of 48 cases in which there was acute abdominal pain the diodone passed out of the stomach in only 14—i.e., there seemed to be a pyloric spasm in most of these cases (figs. 2, 4, 5).

Among the 22 patients with perforation who were treated by operation and in whom the diagnosis was therefore confirmed, there were 19 with duodenal ulcer, and in only 6 of these had the medium passed into the duodenum. In 2 of these the films had shown escape of diodone through the perforation (figs. 3 and 7). In the 13 cases, in which the diodone was retained in the stomach (fig. 2), the duodenal perforation could not of course be demonstrated. The first prepyloric ulcer had in it a tiny perforation only, and no medium escaped into either the peritoneum or the duodenum. The second perforation, with a diameter of 0·5 cm., showed an escape of diodone and was diagnosed preoperatively (fig. 4). In the case of the gastric ulcer a large leak was seen (fig. 5).

In 7 of the 16 perforations radiographed but not operated on, the medium passed into the duodenum, and 4 of these showed the viskiosol escaping through the duodenal hole (fig. 8); in the other 9 the pylorus appeared to be in spasm (fig. 2).

DISCUSSION

Diodone and viscous diodone are used because they are water-soluble and soon absorbed. Diodone is continually used for urography, arteriography, &c., and is innocuous; and it has been injected into the peritoneum of the female pelvis in doses of 20–30 ml. without harm ("pelvigraphy") (Kjellberg 1942, Jefferiss and Samuel 1946). It is possible that the polyvinyl alcohol in the viscous diodone might cause some local reaction, because it is only slowly absorbed; but the amount which escapes through the perforation is very small—much smaller than the amounts injected into the pelvis in salpingography, which causes no reactions (Bergin 1951).

This method has not yet been used in enough cases for one to assess its value either in perforations or in other cases; but a good outline of the stomach is so constantly obtained that one should be able to diagnose gastric ulcers with reasonable certainty. Duodenal perforations will occasionally be demonstrated but a negative finding has no value. A minor use is to show whether the stomach is full or empty after what appeared to be adequate suction.

Summary

An account is given of the treatment by one surgeon of 125 acutely perforated peptic ulcers: 65 by aspiration, 45 by simple suture, and 15 by partial gastrectomy.

A method is described of outlining the stomach and demonstrating the site of the perforation radiologically.

The three methods of treatment in the present series and in previously published series are compared as regards mortality, morbidity, and difficulties.

In patients who are in good condition on admission:

(1) The mortality is the same whatever method is used.

(2) The immediate morbidity of simple suture is much higher than that of aspiration.

(3) The likelihood of recurrent or persistent ulceration is very great in those with a long previous history of dyspepsia.

Fit patients should undergo immediate partial gastrectomy if they have a long previous dyspeptic history; but if they have had little or no previous dyspepsia they should be treated by aspiration.

Patients who are ill on admission from the effects of the perforation will die if treated by aspiration or by gastrectomy. The ulcer should be sutured and they should be given *vigorous* resuscitative treatment.

Those who, on admission, are ill from an associated medical condition should be treated by aspiration.

It gives me pleasure to thank the surgeons at the General Infirmary at Leeds for the opportunity to treat these patients and to publish the results; and Prof. A. S. Johnstone and his staff for facilities, help, and coöperation in the radiological studies.

REFERENCES

Armitage, G. (1954) *Univ. Leeds med. J.* **3**, 23.
Baritell, A. L. (1947) *Surgery*, **21**, 24.
Beahrs, O. H., Duncan, D. K., Vadhelm, L. A. (1953) *Surg. Gynec. Obstet.* **96**, 637.
Bedford-Turner, E. W. (1945) *Brit. med. J.* i, 457.
Bergin, J. H. E. (1951) *Brit. J. Radiol.* **24**, 93.
Careyannopoulos, G., Christopoulos, C. (1952) *Surgery*, **32**, 784.
Chamberlain, D. (1951) *Proc. R. Soc. Med.* **44**, 273.
Doll, R. (1950) *Brit. med. J.* i, 215.

References continued at foot of next column

DIAGNOSIS OF TUMOURS OF THE GLOMUS JUGULARE

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With illustrations on plate

TUMOURS of the glomus jugulare, once thought to be rare, are now being reported with increasing frequency. The number published to date is approximately 84, but there may well be more because some cases previously recorded under different names are now thought to be glomus tumours.

About half of these tumours arise in the adventitia of the dome of the jugular bulb and then extend through the floor of the middle ear into the tympanic cavity. The remainder originate from a glomus body within the temporal bone. Irrespective of the point of origin, the tumour may spread in one of two ways:

(1) Progressive expansion in the middle ear with bulging of the drum, which is destroyed and a granular mass then protrudes into the external canal.

(2) The tumour extends medially along the petrous pyramid circumscribing the labyrinth and eventually invades the cranial cavity with compression of central nervous structures and involvement of one or more cranial nerves. These different modes of extension account for the varying symptomatology.

The tumour morphologically resembles the carotid-body paraganglioma and the two lesions may occur in the same patient. Histologically the cells are large and polygonal, with slightly eosinophilic cytoplasm, and they tend to be uniform in size and shape. They are arranged in alveoli or columns separated by a varying amount of stroma which is often very vascular. Tamari et al. (1951) consider that the adventitia of the jugular bulb is a highly undifferentiated mesodermal layer and that any cell undergoing division here may become either a fibrocyte, a histiocyte, or an endothelial cell. On this basis tumours arising from the glomus jugulare may vary in their gross structure, tendency to hæmorrhage, rate of growth, and response to radiation therapy. This also explains the confusing nomenclature.

Except in children, the tumours grow very slowly and they may reach an advanced stage with intracranial extension before they are identified. The duration of symptoms before the patient seeks attention varies from nine months to twenty years. The length of illness may be twenty to thirty years. 15–20% of cases become malignant after a long benign course. Metastases have been reported in the liver, lungs, and cervical glands in a few cases.

Several deaths have been recorded up to 1951: 2 occurred after attempted removal of the tumour, 4 as a result of gross intracranial extension, and 1 following meningitis and a cerebellar abscess.

The majority of patients are middle-aged females who usually present with aural symptoms. A definite familial tendency has been described.

Symptoms and Signs

The commonest symptoms are chronic otorrhœa, progressive deafness, tinnitus, and hæmorrhage from the affected ear, especially on manipulation of a polyp which is often present. If only a superficial portion of a polyp has been removed for biopsy the true diagnosis may be missed; and obviously not all aural polyps are examined histologically. A bruit over the mastoid area and neck is occasionally the presenting or dominant symptom.

As the tumour spreads, neurological disturbances occur, multiple cranial palsies being characteristic. The cranial nerves most frequently involved are the 7th, 8th, 9th, 10th, 11th, and 12th. The 5th and 6th nerves are occasionally affected. Trigeminal pain or sensory disturbance may arise from local pressure without actual involvement of the nerve. Ataxia and nystagmus have been described, but pyramidal signs are uncommon. Sensory disorders and symptoms of increased intracranial pressure are also rare.

Although few present with neurological symptoms, 40% of the reported cases had clinical evidence of some neurological disturbance, such as hoarseness due to involvement of the vagus. The earliest neurological symptoms described have been dryness or stiffness of the tongue, a sensation of irritation in the pharynx, dysphagia, and aphonia. Headaches, vomiting, and failure of vision were the only manifestations in the cases recorded by Dockerty et al. (1951). Hierons (1954) described a case presenting with papillœdema.

Radiological Findings

At some stage during the disease the radiological appearances are often diagnostic, but surprisingly enough there are only two radiological papers on this subject (Cova and Meda 1952, Riemenschneider et al. 1953). The radiological signs are:

(1) Sclerosis of the mastoid which cannot be differentiated from a chronically infected mastoid without tomography.

(2) Destruction of the lower portion of the petrous pyramid, the ridge remaining as a more or less intact shell (fig. 1). The type of erosion peculiar to glomus tumours can only be demonstrated satisfactorily by tomography—a very simple procedure in this area.

(3) Enlargement of the jugular foramen on the affected side, with perhaps a mass in the posterior nasopharynx (fig. 3).

(4) On arteriography, a tortuous mass of new vessels in the neck, the petrotemporal region, or posterior fossa (fig. 2). (Alexander et al. (1951) think that the early blood-supply of the tumour is from the external carotid artery and later also from the vertebral artery, and they state that the tumours are best seen in the venous phase of the arteriogram.)

(5) Signs of raised intracranial pressure, such as thinning and destruction of the clinoids, when the tumour has extended widely into the middle and posterior fossa.

Differential Diagnosis

Destruction of the base of the skull, including the petrous bone, may be seen in the following diseases, but the erosion in glomus tumours differs in its site of origin and other features.

(1) *Acoustic neuroma.*—There is less emphasis on the massive destruction of the lower portion of the petrous pyramid, and the widening and erosion is chiefly of the internal auditory meatus. No soft tissue mass is seen in the nasopharynx.

MR. MOORE: REFERENCES—*continued*

Estes, W. L. jun., Bennett, B. A. jun. (1944) *Ann. Surg.* **119**, 321.
Forty, F. (1946) *Brit. med. J.* i, 790.
Gill, W. G., Jenkins, T. P. N. (1950) *Ibid*, i, 488.
Gilmour, J. (1953) *Lancet*, i, 870.
Graham, R. R. (1946) *Amer. J. Surg.* **72**, 802.
Heslop, T. S., Bullough, A. S., Brun, C. (1952) *Brit. J. Surg.* **40**, 52.
Illingworth, C. F. W., Scott, L. D. W., Jamieson, R. A. (1946) *Brit. med. J.* i, 787.
Jefferiss, D., Samuel, E. (1946) *Brit. J. Radiol.* **19**, 462.
Jones, F. A., Parsons, D. J., White, B. (1950) *Brit. med. J.* i, 211.
Kjellberg, S. R. (1942) *Acta radiol., Stockh.* **23**, suppl. 43.
Lassen, H. K. (1952) *Arch. Surg.* **65**, 673.
Lowdon, A. G. R. (1952) *Lancet*, i, 1270.
Mage, S., Payson, B. A. (1952) *Surg. Gynec. Obstet.* **94**, 581.
Miller, E., Mersheimer, W., Silverstein, M. (1953) *Amer. J. Surg.* **86**, 688.
Nuboer, J. F. (1951) *Lancet*, ii, 952.
Sallick, M. A. (1936) *Ann. Surg.* **104**, 853.
Seeley, S. F. (1951) *Postgrad. med. J.* **10**, 359.
Stead, J. R. St. G. (1951) *Lancet*, i, 12.
Strauss, A. (1944) *Ann. Surg.* **120**, 60.
Tandberg, O. (1950) *Acta chir. scand.* **100**, 176.
Taylor, H. (1946) *Lancet*, ii, 441.
— (1951) *Ibid*, i, 7.
Toland, C. G., Thompson, H. L. (1936) *Ann. Surg.* **104**, 827.
Vaughan, R. H., Warren, R. (1951) *New Engl. J. Med.* **244**, 898.
Visick, A. H. (1946) *Brit. med. J.* ii, 941.
Yudine, S. (1939) *J. int. Chir.* **4**, 219.

(2) *Primary tumours of the nasopharynx* may erode the base of the skull but massive destruction of the entire petrous pyramid is most unusual.

(3) *Chordomas.*—Destruction of the dorsum sella occurs first and may extend to involve the petrous bone at a later stage. The erosion of the sella is much more extensive in chordoma and there may be much calcification in the tumour.

(4) *Carcinoma* of the sphenoidal sinus will show its primary destruction locally.

(5) *Metastatic carcinoma* may present a similar picture to the glomus tumour.

The vascularity of the glomus tumour as seen on angiograms is never a feature of these lesions, and this, coupled with the tomographic findings, clinches the diagnosis.

Illustrative Cases

The following 5 cases, seen at the Westminster Hospital, show many of the characteristic radiological findings.

Case 1.—A woman of 52 had had hoarseness for nine years when her doctor noticed "something wrong with her tongue." Vertigo set in eighteen months ago, and painless bleeding and purulent left otorrhœa have been present for about nine months. During the past four months a squint developed with double vision on looking to the left. There was paralysis of the left 5th, 6th, 7th, 8th, 10th, 11th, and 12th nerves. An offensive left otorrhœa was present and a tough polyp, which bled readily on manipulation, was obstructing the left external auditory meatus. There was a systolic murmur over the left mastoid extending down the neck. X-ray examination showed a sclerotic left mastoid with erosion of the apex of the petrous bone; the extent of the erosion was well demonstrated by tomography. The left jugular foramen was enlarged. A left carotid arteriogram (fig. 2) showed a very vascular tumour at the base of the skull. There was free communication between the carotid arteries and jugular veins. The cerebral vessels were poorly filled owing to the extent of the shunt. A biopsy of the aural tumour showed the typical appearances of the glomus tumour. Following a course of radiotherapy, to a total tumour dose of 5600r, the local condition in the ear improved considerably, but no objective change has occurred in the neurological signs.

Case 2.—A woman of 38 had a left cortical mastoidectomy twenty years ago, followed by a radical mastoidectomy in 1941. She had no symptoms until 1948, when bleeding occurred from the left ear. Further exploration of the left mastoid was followed by facial palsy of four months' duration.

There were no further symptoms until 1951 when the left facial palsy recurred with slight hoarseness. When seen in 1953 there was a left 7th-nerve palsy and partial paralysis of the 5th, 6th, 9th, and 10th cranial nerves. A vascular tumour was found in the left ear and biopsy confirmed the diagnosis of a glomus tuomur. Tomographs showed typical destruction of the apex of the left petrous. Following a course of X-ray therapy (maximum tumour dose 4900r), there has been no change in the neurological signs.

Case 3.—A woman of 72 had symptoms dating back to 1939 when she had sudden weakness in the arms and legs. In 1943 her tongue had become "one-sided," and in 1944 she developed dysphagia and right facial weakness with a tendency to fall to the right on walking. At that time there was nystagmus, partial palsy of the right 5th nerve, and complete palsy of the 7th, 8th, 9th, 10th, 11th, and 12th nerves. Sensory ataxia and diminished vibration sense were also present, and a diagnosis of syringobulbia was made. In 1945 new vessels were noted on the right ear-drum and she complained of headaches, giddiness, dysphagia, and dyspnœa. Her B.P. was 230/120. In 1948 she developed diplopia and because of the increase in the vascularity of the ear-drum, a hæmangioma of the tympanic membrane was diagnosed. Erosion of the right petrous was first seen in 1949 and has not altered (fig. 1). On her last admission a "cherry red tumour" was seen protruding from the right ear-drum which is characteristic of a glomus tumour. Teleradiotherapy was started in 1945 and she has had two further courses. The signs and symptoms remain unaltered.

Case 4.—A man of 59 was admitted in 1954 with a history of diplopia and pain in the right eye since September, 1947. In 1948 there was right proptosis and complete right 6th-nerve palsy. Radiographs of the skull and a right carotid arteriogram were normal. There was no abnormality in the nasopharynx or ears. In 1949 hoarseness and dysphagia developed, and later slight weakness of the right arm. There were palsies of the 6th, 9th, 10th, and 11th nerves, and right-middle-ear deafness. Tomography showed a nasopharyngeal mass and destruction of the right petrous and posterior clinoids. In 1950 the dysphagia had increased, and the left 9th and 10th nerves became involved to a greater extent. The symptoms improved after a course of radiotherapy. He remained reasonably well and returned to work in February. Subsequent X-ray examination showed calcification above the sella and an increase in the destruction at the base of the skull extending to involve the right wing of sphenoid and optic foramen. A recent right carotid arteriogram showed elevation of the carotid siphon and straightening and stretching of the internal carotid in the anteroposterior view. No abnormal vessels were seen at the site of the tumour.

Case 5.—A man of 55 was admitted to hospital in 1953 with a left squint, which had been present since 1923. He had operations on this eye in 1951 and 1952. On examination there were palsies of the left 5th and 6th cranial nerves, peripheral constriction of the left visual field, and a diminished left corneal reflex. Deafness in the left ear had set in recently. There was extensive destruction at the base of the skull with erosion of the left anterior and posterior clinoids and calcification above the petrous. Tomography demonstrated destruction of the apex of the left petrous bone as well as the cells of the mastoid antrum. A left carotid arteriogram showed displacement of the internal carotid and middle cerebral arteries.

Summary and Conclusions

A tumour of the glomus jugulare should be considered if there is a long history of increasing unilateral deafness, a hæmorrhagic otorrhœa, or a vascular polyp in the ear. If an apparently simple chronic otorrhœa is associated with unusual neurological signs, tomography of the petrous bone will show characteristic findings. Tomography in the anteroposterior projection is much more reliable than the conventional views of the petrous bone and should be carried out in all suspicious cases. Cerebral arteriography is not indicated if, as so often happens, the diagnosis can be made on the clinical and tomographic findings.

Of the 5 cases described here, 2 are proven histologically and 1 has all the characteristic clinical and radiological findings. The other 2 cases (4 and 5) are probable glomus tumours in view of the long clinical history, relatively benign course, multiple cranial palsies, and characteristic tomographic appearances.

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BIBLIOGRAPHY

Alexander, E., Beamer, P. R., Williams, J. O. (1951) *J. Neurosurg.* **8**, 515.
Capps, F. C. W. (1952) *J. Laryng.* **66**, 302.
Cleary, J. A. (1952) *Arch. Otolaryng., Chicago*, **56**, 378.
Cova, P. L., Meda, P. (1952) *Radiol. med., Torino*, **38**, 573.
— — Nicelli, A. F. (1952) *Arch. ital. Otol.* **63**, 568.
Dockerty, M. B., Love, J. G., Patton, M. M. (1951) *Proc. Mayo Clin.* **26**, 25.
Graf, K. (1950) *Pract. oto-rhino-laryng.* **12**, 129.
Henson, R. A., Crawford, J. V., Cavanagh, J. B. (1953) *J. Neurol. Psychiat.* **16**, 127.
Hierons, R. (1954) *Proc. R. Soc. Med.* **47**, 298.
Lewis, J. S., Grant, R. N. (1951) *Arch. Otolaryng., Chicago*, **53**, 406.
Magarey, F. R. (1952) *J. Laryng.* **66**, 321.
Mattick, B. (1952) *Laryngoscope, St. Louis*, **62**, 311.
Munro Black, J. I. (1952) *J. Laryng.* **66**, 315.
Petit-Dutaillis, D., Bloch, A., Berdet, F., Messimy, R. (1952) *Ann. Oto-laryng.* **69**, 657.
Poli, E. (1950) *Ric. crit. Clin. med.* **50**, 451.
Poppen, J. L., Riemenschneider, P. A. (1951) *Arch. Otolaryng., Chicago*, **53**, 453.
Riemenschneider, P. A., Hoople, G., Brewer, D., Jones, D., Ecker, A. (1953) *Amer. J. Roentgenol.* **69**, 59.
Riveros, M., Pack, G. (1951) *Ann. Surg.* **133**, 394.
Semmes, R. E. (1951) *J. Neurosurg.* **8**, 522.
Tamari, J., McMahon, R., Bergendahl, E. (1951) *Ann. Otol., &c., St. Louis*, **60**, 350.
Terracol, J., Guerrier, Y. (1951) *Montpellier méd.* 39–40, 289.
— — (1952) *Pr. méd.* **60**, 715.
Weille, F. L., Lane, C. S. jun. (1951) *Laryngoscope, St. Louis*, **61**, 488.
— — (1951) *Trans. Amer. otol. Soc. Inc.* 84th meeting, 91.
Zielinski, Z. D. (1952) *Rev. Laryng., Bordeaux*, **73**, 236.

CERVICAL MYELOPATHY

A COMMON NEUROLOGICAL DISORDER

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With illustrations on plate

DEGENERATION of the spine occurred in prehistoric animals as well as in primitive man (Moodie 1923) and changes in the cervical region—now known collectively as "cervical spondylosis" * (Schmörl and Junghanns 1932)—have been found in the ancient Egyptians (Ruffer and Rietti 1912). It is well known that cervical-spine involvement is more common in the elderly, and Kuhlendahl and Kunert (1954) report radiological evidence in 75% of persons between 50 and 75 years of age. Horwitz (1940) and Morton (1950) found a similar incidence among cadavers and it follows that as the average age of the population increases it will become even more frequent. Nevertheless, younger age-groups are not entirely exempt (Hult 1954, Kuhlendahl and Kunert 1954).

The possible clinical significance of these findings has, however, only recently been recognised. Involvement of the spinal roots (see Frykholm 1951) is now an accepted sequel, but the effects upon the spinal cord (Masson and Devic 1949, Brain et al. 1952, Spillane and Lloyd 1951, 1952, Müller 1951, and others) are less well known. It is proposed to deal only with this latter type of case here, and, as the pathology of the condition is still obscure, the term "cervical myelopathy"—also used by Brain (1954a)—is employed.

Despite its recent publicity, our knowledge of this disease is still incomplete and our conceptions of it sometimes inaccurate. Thus, it is often thought of as mainly a surgical entity (Bucy et al. 1948, Allen 1952, Gros and Temple 1953, Semmes and Murphey 1954) closely simulating certain degenerative, and frequently untreatable, diseases of the nervous system (Jager and Moffie 1949, Strully et al. 1951, Liversedge et al. 1953). These cases, however, are only part of a syndrome, the limits of which have not yet been defined.

It has recently become apparent that cervical myelopathy in its various degrees is a much more common disorder than is at the moment generally supposed, and that the clinical spectrum is much wider. In addition, it seems likely that certain hitherto unexplained neurological signs found occasionally in the elderly may be due to cervical spondylosis. The purpose of this paper is to present and evaluate cases of cervical myelopathy observed over a period of fifteen months in an attempt to substantiate these assumptions.

Classification of Material

The 32 cases of cervical spondylosis with spinal cord complications that form the basis of this report can be conveniently divided into groups according to the severity of the clinical picture.

Group I (15 cases).—All of these patients complained of trouble with their legs or arms or both. They had the clinical findings usually associated with cervical myelopathy (Brain et al. 1952).

Group II (12 cases).—These patients had symptoms of cervical root irritation only but on examination evidence of cord compression was found.

Group III (3 cases).—Here neurological abnormalities were discovered but no accompanying symptoms could be elicited.

Group IV (6 cases).—It was on occasion thought that cervical myelopathy was complicating other diseases, either of the nervous or other systems. 4 of the cases have already been included in groups I and II.

* Although the primary defect is in the intervertebral disc, other factors are present and in the type of case to be described terms such as "prolapsed disc" should be abandoned.

GROUP I

Of the 15 patients in this group, the diagnosis has been verified at necropsy in 1 (case 2) and by myelography in 11: 7 of the latter have been included in a review of this disorder (Clarke and Robinson). The 3 in which myelography could not be carried out, because of the patients' wishes or age, had adequate radiological evidence of cervical spondylosis, and their clinical states corresponded exactly with what is becoming accepted as characteristic of the disease.

Because we have only recently become aware of cervical myelopathy as a common condition, its clinical variations, and in particular the early stages, are not well known. The cases here presented, however, give some indication of the degree of variation to be expected among this group of patients.

The most severe type of case is represented by 4 patients. They were all severely paraplegic and 3 had symptoms also in their upper extremities. Of the latter, the following is typical:

Case 1.—A retired postman, aged 66, said that four or five years ago he had noticed cramps and aching in the calves, followed by a weakness of the right foot three years before admission to hospital. Eighteen months before admission, after a period of bed rest, the whole right leg became weak and soon the left was similarly affected. His walking deteriorated progressively until he was bedridden. Two years before admission he had weakness and paræsthesiæ in the ulnar two fingers of the right hand which spread to the whole hand and arm. The same symptoms had appeared in the left hand. Sphincter functions were normal and he had never had any neck symptoms.

Forty-five years previously he had fallen and fractured the left clavicle but suffered no apparent sequelæ.

Examination.—He was a small poorly developed man confined to his bed. The neck was normal, apart from slight painless limitation of movement in all directions except flexion. Wasting was generalised in the limbs but more marked distally, and coarse fasciculations could be seen in several muscles. Tone was increased in all limbs but more so in the lower extremities and more on the right side. Wrist and finger extension and dorsiflexion of the foot on the right were impossible, and extension of the forearm and flexion of the thigh on this side was severely affected. Weakness of a similar distribution, but less severe, was found on the left side. The triceps-jerks were absent and brisk finger flexion accompanied the biceps and supinator reflexes; the finger-jerks were exaggerated. The abdominal reflexes were absent and those in the lower limbs much increased; plantar responses were extensor. Slight pain and temperature impairment could be demonstrated on the left and posterior-column modalities were decreased more on the right side and more in the legs.

Investigations.—Cervical-spine X ray: a marked lordosis centring on C6 with acute angulation forward of the spinal canal. The body of C6 was wedge-shaped and those of C3, C4, and C5 were distorted by gross degenerative changes (fig. 1). Cerebrospinal fluid (C.S.F.): manometry performed in the usual manner showed no obstruction, but with the neck in full extension a complete block could be demonstrated. The fluid's contents were normal. Myelogram: with the neck in extension there was a complete hold-up of the radio-opaque material at the level of C5–6 (fig. 1) and only repeated neck flexion would allow it to pass (fig. 2). There was also partial obstruction at the C4–5 and C3–4 levels.

Treatment and Progress.—The patient has been provided with a plastic collar and a spring splint for the right fingers. Intensive physiotherapy has produced slight improvement. It is not, however, expected that recovery will be extensive at this stage of his disease; surgery was not considered possible.

A diagnosis of "? motor-neurone disease" had been made elsewhere, but there was clear clinical evidence of a focal cervical lesion which was located by myelography. It is possible that the sixth cervical vertebral body was damaged by the fall and the resultant instability had encouraged the excessive degenerative changes. The part

played by his occupation can only be presumptive, but for many years he had carried a postman's bag on his left shoulder. His spinal cord has little or no reserve of function ; for, as soon as inactivity is enforced deterioration occurs. Thus, a recent pulmonary infection has undone the previous progress.

At the other extreme of the clinical spectrum is case 2.

Case 2.—A caretaker, aged 62, had an attack of bronchitis, to which he was subject, four months before admission to hospital. On resuming work a month later, he noticed a mild weakness of the left foot so that it would drag after he had been walking for about ten minutes. There were no other symptoms.

Examination.—The signs of aortic regurgitation were found and the blood-pressure was 200/100. There was moderate weakness of the dorsiflexors of the left toe and foot. The reflexes were increased in the left arm and leg, with an extensor plantar response on that side.

Investigations.—Cervical-spine X ray : severe degenerative changes especially at C5–6 and C6–7 levels. C.S.F. : contents were normal and there was no block, with the neck in the neutral position.

Progress.—A month after discharge, he was readmitted in congestive cardiac failure and died the same day.

Necropsy.—Rheumatic aortic valvular disease and gross pulmonary œdema were present. On the anterior wall of the cervical spinal canal and almost entirely on the left side, was an osteophytic excrescence at the disc space of C5–6. The spinal cord had been indented by it and by smaller protrusions at other levels. Appropriate staining showed degeneration in the left lateral column.

In patients with the more advanced disease it is not unusual to find that the first symptom was, as in this case, a weakness of one lower limb, and that over a period of months or years other extremities were involved until the full picture was produced (cf. case 1).

Although many examples of cervical myelopathy similar to case 1 have been described, those with milder changes have been given less notice. The following is a second instance of the latter type :

Case 3.—A male ballet-dancer, aged 39, had noticed wasting of the right hand and pain in the right shoulder for eight months. Neck movements provoked the pain, and in addition he experienced paræsthesiæ in the right thumb, index, and middle fingers. For a similar length of time the left leg had felt " dull " and he was less agile on it than previously.

Examination.—Lateral flexion of the neck to the right produced pain. There was moderate wasting and weakness of the small muscles of the right hand and slight weakness of the triceps on that side. The right triceps-jerk was absent and the left knee-jerk brisker than the right ; the left plantar response was extensor. Tactile and painful sensibility were impaired over the right thumb, index, and middle fingers.

Investigations.—Cervical-spine X ray : moderately severe degenerative changes at C6–7, especially on the right side. C.S.F. (examined elsewhere) : no block and contents normal. Myelogram : " a filling defect at the C6 level."

Treatment and Progress.—He is still under treatment and is having intermittent neck traction and local physiotherapy to the neck and right shoulder. He is relieved of the pain but the signs still persist and weakness of the left leg is unchanged.

It seems probable that this man has noticed the symptoms of cervical myelopathy early because he is observant and depends on his limbs for the execution of skilled and delicate movements. Thus it is only when he is dancing that he notices a defect in the left leg ; it is not noticed at other times. He is the youngest patient in the whole series and it is likely that trauma has played some part in his case ; his symptoms began after vigorous dancing. It is unusual to find root symptoms in an upper extremity and cord symptoms in the contralateral leg. More usually the root and cord symptoms are on the same side (cf. cases in group II). As, however, there are often multiple cord-compressing lesions in this condition, considerable variation is to be expected.

The remaining 12 cases in group I are intermediate as regards severity between case 1 at the one extreme and cases 2 and 3 at the other. Dysphagia due to large anterior osteophytes (Bauer 1953) was encountered in only 1 case. In 9 of the 15 cases, a diagnosis of cervical myelopathy was made either here or elsewhere. Another diagnosis had been propounded in each of the remaining cases but further investigations revealed the correct one. Thus 3 of the patients were thought to be suffering from disseminated sclerosis, 1 from syringomyelia, 1 from spinal arachnoiditis, 1 from an intramedullary cervical-cord tumour, and 1 (case 1) from motor-neurone disease. It can be stated, however, that when the distinctive picture of cervical myelopathy is adequately recognised clinical confusion with other diseases should not occur.

GROUP II

The 12 patients in this group had the features of cervical-root irritation but spinal-cord signs (ipsilateral or bilateral) could be demonstrated though they were not associated with any symptoms. These cases are similar to those spoken of by Stookey (1940) as belonging to " the syndrome of unilateral ventral pressure," the pathological lesion being a combination of root and cord compression. It should, however, be noted that this does not necessarily exist at the same level, as Stookey (1940) believed.

All the patients presented themselves at hospital with the clinical picture of cervical-root irritation, the details of which have been adequately dealt with in several papers (see Frykholm 1951). No estimate of the true incidence of these cases is possible, but during the same period in which the 12 cases were observed about 40 instances of root compression without these features were encountered.

The ages of the patients did not vary significantly from those in group I, which is of some interest when one considers that cases of root compression due to spondylosis tend to occur at an earlier age than those with cervical myelopathy. Every patient had symptoms referable to the neck. The cord signs varied in degree but they were all mild and invariably motor in type ; sensory disorders of definite cord origin were not observed. This is in keeping with the known susceptibility of the pyramidal tracts to compression, recently confirmed experimentally by Tarlov (1954). In only 1 case was there a contralateral extensor plantar response and is therefore a link with group I (cf. case 3). 3 patients had bilateral cord signs but in the remainder they were ipsilateral. The former included 2 cases with bilateral extensor plantar reflexes as the only indication of cord lesions and in 1 of these myelography confirmed the diagnosis. The 3rd case is typical of this subgroup :

Case 4.—A bus-driver, aged 49, had suffered pain in the left shoulder for three years and clumsiness of the left hand for six months. He had complained of a sensation of numbness in the left thumb for four months and the shoulder pain now extended to this digit. The lower limbs were normal.

Examination.—Neck movements to the left produced pain. The left triceps and thigh flexors were slightly weak. Fasciculations were occasionally present in the left deltoid. The supinator reflexes were both inverted and the finger-jerks much increased. Thigh flexors were slightly weak and leg reflexes were brisker on the left ; both plantar reflexes were extensor. The only sensory impairment was in the territory of the left C6 root.

Investigations.—Cervical-spine X rays : degenerative changes more marked on the left. C.S.F. : complete block with neck in full extension : contents normal. Myelogram : complete block at C4–5 with the neck in extension.

Progress.—Heat and massage to the neck and left shoulder produced gradual improvement. Neck traction did not give any relief. He now has only mild neck pain and for the last nine months has been able to drive his bus.

In this case there is clear evidence of cord compression, yet there are no symptoms referable to it. He has improved with conservative treatment but is under close

observation because of the chances of deterioration in the myelopathy.

Of the 9 patients with ipsilateral cord signs, 6 had increased tendon-jerks only; in nearly every case these were confined to the lower limbs and they might or might not be accompanied by extensor plantar responses and decreased abdominal reflexes on that side. Why hyperreflexia should sometimes occur without an accompanying pathological plantar reflex remains unexplained. In 2 cases, slight hypertonicity existed in the ipsilateral forearm and case 5 is one of them.

Case 5.—A housewife of 62 had experienced severe burning and shooting pain in the right hand for five weeks. It affected the middle finger mostly and was worse when in bed at night. Sensation was impaired in the hand. For a similar length of time, there had been stiffness of the neck and pain extending from it into the right shoulder.

Examination.—Neck movements were limited by pain. Tone was slightly increased in the right forearm but, apart from exaggerated tendon-jerks and an extensor plantar reflex on the right, the rest of the nervous system was normal.

Investigations.—Cervical-spine X rays: spondylotic changes at C5–6 level.

Treatment and Progress.—Local palliative measures have produced complete freedom from the previous symptoms for ten months.

This patient was referred as a case of the carpal-tunnel syndrome. However, the cord signs, the neck symptoms, a negative cuff test (Gilliatt and Wilson 1953), and the response to treatment directed proximally make that diagnosis unlikely. It also seems improbable that she is suffering from two lesions, a possibility that must be considered in some cases. The finding of cord signs in cases of "brachial neuritis" is obviously of considerable diagnostic value.

Myelographic evidence of the cervical lesion was only obtained in 2 of the 12 cases, the other patients being seen in the outpatient department. However, the combination of cervical-root irritation with cord signs, and radiological evidence of spondylosis in all of them, represents a distinct syndrome.

At the moment, the prognosis in these cases is unknown; but it is important to observe that although relief from root symptoms was achieved in most cases, the myelopathic signs persisted.

GROUP III

The number of cases in each group does not necessarily reflect the relative frequency of the types. Thus although there are only 3 in group III, these cases may be commoner than any of the other types. The patients, who were all over 65 years of age, attended hospital for complaints that were not related to the cervical spondylosis discovered incidentally on X-ray examination. The following is a typical example:

Case 6.—An ex-Army physical-training instructor, aged 66, complained of peculiar sensations in his knees and locking of the right elbow. Five years previously he had suffered a severe attack of right sciatic pain.

Examination.—Degenerative disease of the knee-joints and gross osteo-arthritic changes in the right elbow accounted for his symptoms. However, there were bilateral extensor plantar reflexes, slight impairment of joint position sense in the right big toe, and decreased vibration sense appreciation in the distal parts of both lower limbs. To clinical examination, the neck was normal.

Investigations.—Cervical-spine X rays: gross spondylotic changes maximal at C5–6. C.S.F.: no block with neck in extension or flexion: contents normal. Myelogram: moderate indentation of the anterior surface of the 'Myodil' column at all levels of the cervical spine but mostly at C5–6. There was no block on extension. A filling defect at the L4–5 level indicated a prolapsed disc.

Treatment and Progress.—He has been treated with physiotherapy and is pursuing a fluctuating course closely related to a lack of employment. The abnormal signs are still present, and unchanged, after twelve months observation.

The previous attack of "sciatica" indicated a disc lesion in the lumbar region, verified by myelography. That certain persons suffer from multiple disc lesions is now recognised (Brain 1954a), although some may be symptomless (Trowbridge and French 1954).

In the other 2 cases the clinical findings were much the same, although in each there were reflex abnormalities in the upper as well as the lower extremities. One, like case 6, had a mixture of mild motor (including slight muscle weakness) and sensory changes while the other had only motor impairment. In each, there was a hemiplegic distribution of the signs. A lumbar puncture or a myelogram was carried out in each one of them and the findings were the same as in case 6. It is interesting to note that in this man severe cervical spondylosis prevented adequate neck extension and may therefore be protecting his spinal cord from further damage, as was probably the case also in a patient belonging to group I.

The cases comprising this group are included with much less certainty than any of the others. However, the recent study of Pallis et al. (1954) and the myelographic evidence in 2 of the present cases help to confirm the existence of this clinical entity. Pallis et al. (1954) have investigated a group of non-neurological patients over the age of 50, both clinically and radiologically. They found that 60% had neurological abnormalities and all of these had cervical spondylosis. As in the cases described above, the abnormal signs were mild, symptomless, and either motor or sensory or both. The fact that posterior osteophyte formation seen on lateral X-ray examination of the cervical spine does not necessarily indicate narrowing of the spinal canal, as maintained by these authors, does not detract from the importance of their work. However, the rôle of thoracic spondylosis (excluded in case 6 and the others) must also be considered. Despite the presence of cervical spondylosis, spinal-cord signs may be due to compression at a lower level.

It should be noted that all the patients in group III were of limited intelligence, and it is possible that they had not noticed certain disabilities that would be more readily discernible to more observant individuals.

Another objection to attributing spurious neurological signs in the elderly to cervical myelopathy is the possibility of other lesions producing them. Savitsky and Madonick (1943) offer several suggestions to account for the extensor plantar reflexes in a healthy individual, but the only one to be considered seriously is cerebral arteriosclerosis and associated mild cerebrovascular accidents; these have been excluded, as far as possible, from the 3 cases of this group. However, this is a formidable consideration when dealing with patients over 65. At least 4 cases, not included here, in which this problem arose have been considered recently, but in the absence of pathological studies a definite conclusion is not possible.

GROUP IV

If it is correct that cervical myelopathy is a common disorder it would not be surprising if it were found with other diseases. This association has in fact been observed and group IV contains those patients in whom two pathological processes could be detected. It is convenient to consider first the occurrence of cervical myelopathy with non-neurological conditions, and then the more difficult problem of two coexisting diseases of the nervous system.

Cases belonging to the first type have already been included among the various groups of cervical myelopathy. Thus in group I the second patient (case 2) was suffering also from aortic incompetence and died of congestive cardiac failure. Another patient was admitted to hospital because of ischæmic heart-disease and was found to have the signs and symptoms of a C5-compressing lesion although she had not complained spontaneously

of it. Case 7 presented below is of particular interest because of the difficulty of differentiating between the two diseases.

Case 7.—A blacksmith, aged 49, was referred to Dr. Russell Fraser as a case of thyrotoxic myopathy. He had been losing weight for two or three months and for five weeks had noticed weakness of the legs, particularly the left one. He was becoming tremulous and more excitable than usual.

Examination.—He was anxious and sweating. There was generalised muscle wasting with coarse fasciculations in several groups and considerable associated weakness, more marked in the left triceps. The reflexes were all abnormally brisk except the left triceps-jerk which was almost absent; the plantar responses were extensor, the left being the more definite. Auricular fibrillation was present, and, though the thyroid was not palpably enlarged, the patient was clinically thyrotoxic.

Investigations, Treatment, and Progress.—No C.S.F. block was demonstrated, but neck positioning was not employed; the protein content of the fluid was 90 mg. per 100 ml. Thyrotoxicosis was readily confirmed and the patient was treated with methyl thiouracil and *l*-thyroxine. Improvement was dramatic and when the thyrotoxic symptoms had disappeared, his only complaint was of some weakness of the left leg. On re-examination the only abnormalities were marked weakness of the left triceps and moderate involvement of the small muscle of the left hand: the left triceps-jerk was still absent and all the other reflexes were brisker than normal: the plantar responses were still extensor.

A manometric block with the neck in extension was now demonstrated. The C.S.F. protein content was still abnormal and X rays of the cervical spine revealed moderate changes at C5–6 and C6–7. A myelogram confirmed the block in extension, the main compressing lesion being at C6–7.

Now, three years after his first complaint began, his thyroid function is normal, but he still notices some weakness of his left leg.

This man had severe muscle wasting associated with thyrotoxicosis, and it was only after this had been treated that it was possible to evaluate the evidence of a focal cervical-cord lesion. No specific therapy has been directed at the latter, but he is being closely observed and deterioration will call for a further consideration of treatment.

One case included in group II should also be mentioned here. The patient, a man of 68, was admitted because of chronic bronchitis, and on examination was found to have severe wasting of the right shoulder-girdle and biceps. He stated that this had been present for about eight years. He had the signs of a C5 root lesion on the right and also ipsilateral pyramidal-tract signs. Neck movements, especially extension, were restricted, and X rays of the cervical spine revealed marked degenerative changes at all levels. In his occupation he had carried bags of coal on his shoulders.

A man of 67 was suffering from diabetes mellitus but had mild pyramidal-tract signs on the left side. It was considered that he might be an example of diabetic myelopathy (Garland and Taverner 1953); but, in the presence of restricted neck movements, severe cervical spondylosis, and evidence elsewhere of root pain, it seems reasonable to suggest that spondylotic myelopathy may be playing a rôle in this case.

It is also possible that cervical myelopathy may complicate neurological diseases, but here differentiation may be difficult or impossible. Case 8 is an example of this subgroup.

Case 8.—A waitress, aged 43, for two or three years had experienced paræsthesiæ all over the right hand and to a lesser degree in the left. A similar sensation, together with stiffness, had been present in the legs for about a year. More recently there had been aching in the shoulders with extension to the left arm.

Examination.—She was tense and anxious but her general condition was good. A coarse sustained nystagmus with lateral gaze to either side was found and sensation was impaired over all of the left side of the face and tongue. There was an adductor palsy of the right vocal cord; the right side of the tongue was wasted, and active fibrillation could be seen. The right upper limb was wasted and weak, particularly proximally, and the right thigh flexors were also slightly affected. All the tendon-jerks were absent in the right upper extremity, but in the left both the biceps and supinator reflexes were entirely replaced by finger flexion and the triceps and finger jerks were pathologically brisk on this side. In the lower limbs the reflexes were increased (more so on the right side) and both plantar responses were extensor. Pain and temperature sensation was impaired over the left half of the body and over the right shoulder, but the posterior-column modalities were affected mainly on the right side and principally in the hand.

Investigations.—Skull X ray: no basilar impression. Cervical-spine X ray: marked degenerative changes particularly at the C5–6 level. C.S.F.: a manometric block with the neck in full extension. Myelogram: a complete break in the myodil column at C5–6 level with the neck extended. It was therefore concluded that she had syringobulbia and syringomyelia complicated by cervical myelopathy.

Treatment and Progress.—She was treated with physiotherapy and a course of radiation therapy, and, although there has been little improvement in her condition, there has been no deterioration over the last year.

The arm reflexes indicated a focal cervical-cord lesion and investigations showed that spondylosis was present. It is conceivable that patients with a cervical-cord syrinx are more likely to suffer from spondylotic encroachment of the spinal canal because of the increased size of the spinal cord. No attempt has been made to relieve the compressing lesion; this will be considered if progression occurs. The detection of this complication is important because it may be possible to relieve some symptoms despite the fact that the primary disease is little influenced by therapy.

Discussion

Recognition of the clinical aspects of cervical spondylosis is relatively recent. One reason for the delay is that, as Pallis et al. (1954) point out, we have been led to believe that degenerative changes in the cervical spine are, like arteriosclerosis, an inevitable accompaniment of the normal ageing process, as is shown by the tendency to describe them as "normal for the age of the patient." Another reason is that Schmorl and his associates (see Beadle 1931), when studying the intervertebral disc, did not extend their investigations to include the cervical spine. A third is that it has been customary to attribute inexplicable neurological signs in elderly persons to cerebral arteriosclerosis or to similar degenerative changes in the brain or spinal cord: pathological examination of the cord has usually been reserved for those cases with clear evidence of a cord lesion, and information in other cases is thus incomplete.

Incidence

The cases included in this report were all seen in the medical wards or in the outpatient department of a general hospital. It has not been found possible to estimate the true incidence of cervical myelopathy, but it is clear that in all its various forms it is one of the commonest neurological diseases encountered. During the same period of observation, about 40 examples of uncomplicated cervical-root involvement were also seen, as well as 2 cases of acute cervical-cord lesion. Of these latter, 1 had a true disc prolapse and so was similar to the cases described by Bucy et al. (1948), and considerable improvement followed operation. In this case there was no history of neck trauma, but in the 2nd case a frontal head injury had produced forceful hyperextension of the neck. Limb symptoms were absent but pyramidal-tract signs of cervical-cord origin were present on one side. This sequel to a head injury is well known (Walshe 1944), but it is one of the possible complications of cervical spondylosis (Walshe and Ross 1936, Barnes 1948), which was present in this patient. Although these cases have cord lesions they have not been included in the

present series, because of their strict relationship to *acute* trauma.

Ætiology and Pathology

Without discussing the detailed pathological changes in the cervical vertebræ (Frykholm 1951, Brain 1954a, Kuhlendahl and Kunert 1954), it is possible to suggest that spondylosis producing cervical-cord compression may be due to senile degenerative disc and bone changes and therefore "primary," or may be "secondary" and associated with congenital anomalies of the cervical vertebræ or acute neck trauma. The primary type accounts for the vast majority of cases and it seems likely that chronic occupational trauma may be in part responsible in some of them (Hult 1954). Thus in 7 of the 32 cases this possibility existed; 5 had habitually carried heavy objects on their shoulders (4 in group I and 1 in group II) and 2 had been subjected to unusual stresses (cases 3 and 6).

3 had secondary spondylosis—2 in group I and 1 in group II. In the former, the anomaly was single in one case and involved only one lamina, but in the other case there were multiple bony lesions. The group-II patient had a congenital fusion of the bodies of C4 and C5. In each of them, spondylosis due to resultant mechanical instability was in evidence and had produced the cord lesion. The clinical pictures in the different types of spondylosis are indistinguishable and treatment is the same.

The ætiology of the cord changes is still under discussion, but the hypothesis of vascular insufficiency implied by Morton (1950) and Allen (1952) has been given support by Mair and Druckman (1953) and Girard et al. (1954) although they do not agree on the actual mechanism. This hypothesis would adequately explain the clinical findings in the present series, although direct neuronal damage (Bedford et al. 1952, Tarlov 1954) and arachnoiditis (Girard et al. 1954) may also play a part. The series provides no direct evidence in favour of Taylor's (1953) view that posterior as well as anterior compression occurs, but the suggestion is a very plausible one.

Diagnosis

One of the most important diagnostic features of these cases is the reflexes. As was pointed out by Walshe and Ross (1936) the tendon-jerks in the arms are of particular localising value; partial or complete inversion of the radial and biceps, and a hyperactive finger-jerk are frequently encountered.

Manometry carried out with the neck in various positions ("postural manometry") is a valuable test (Kaplan and Kennedy 1950). So far a 100% correlation has been established between the manometric findings and those at myelography; if the former demonstrated a block, the latter confirmed and localised it. Furthermore in two cases in group III a block was absent with both postural manometry and myelography. In figs. 1 and 2 the effect of neck extension on the myodil column is shown. When dealing with group-I patients it may therefore in future be possible to dispense with myelography if clinical, radiological, and manometric findings are adequate. This will be of value if the patient is frail or if active therapy is not contemplated. Experience indicates that the test is of less value in cases with evidence of milder cord involvement (groups II and III). Confirmation of the findings of Pallis et al. (1954) will, however, facilitate the diagnosis in the latter group.

It is fully realised that a new diagnosis is often brought forward to explain clinical mysteries, and many such diagnoses have afterwards fallen into disrepute because they too soon became too popular. Bearing this in mind, the diagnosis of cervical myelopathy has never been made without caution. The physical signs, particularly in groups II, III, and IV, have been verified by more than one examiner.

Treatment

The best method of managing patients with cervical myelopathy has not yet been established, and difficulties are increased by an ignorance of the course of the disease, especially in groups II and III.

In group I conservative measures such as a collar, combined with physiotherapy and active rehabilitation, should be employed first. Good results were observed in 6 patients, and the progression of the disease was halted in all of them. Assessment of results is difficult, however, because the natural course of the disease varies considerably and is characterised by periods of arrest. The degree of recovery has never been great and full return of function seems unlikely; the importance of early diagnosis and treatment is thus evident. Extensive bed rest has not been used in these cases and it seems unlikely that it has any part in therapy. It may even be contra-indicated, for in 2 cases (case 1 is one of them) the patient's condition deteriorated when he was immobilised. Neck traction is also of limited application (Brain 1954b and c). Only 1 patient, having failed to respond to medical management, was operated upon, and in this case, though little improvement has taken place, it is hoped that the advance of the disease has been arrested. Surgery seems to play a less important part than some would maintain (Ricard and Masson 1951, Müller 1951, Guillaume and Caron 1954, Semmes and Murphey 1954) and a study of the whole problem of therapy is being undertaken. The problem is perhaps most difficult in the early stages of the disease (case 3), for our knowledge of these cases is limited. Conservative handling with close observation, and consideration of laminectomy should the disease continue to progress, seems to be the most satisfactory approach.

Group-II patients received similar treatment to those with uncomplicated root syndromes. Neck traction is not necessarily contra-indicated. But the patient must be observed with care because of the evidence of myelopathy, and should cord signs increase a collar should be used.

In group III, treatment directed at the cervical spondylosis is obviously not desirable. The results of further study will determine future measures.

The patients in group IV present individual problems, but the methods of treatment are the same.

Many interesting questions arise, especially in groups III and IV. Much more work is needed, and, as Pallis et al. (1954) have suggested, the neurology of old age requires revision with cervical myelopathy in mind. Such studies as that of Lassek (1944) on the extensor plantar response in health and in disease must be reconsidered, and further evaluation is needed of patients with non-neurological disorders who have inexplicable involvement of the nervous system. There are also some complicated neurological cases which might profitably be reviewed to ascertain whether cervical spondylosis is in any way responsible for their condition.

Summary

Spinal-cord compression due to cervical spondylosis (cervical myelopathy) is a common disorder.

A series of 32 cases seen during fifteen months is divided into three groups according to the severity of the clinical picture. A fourth group is made up of patients with other diseases, neurological or non-neurological, who, in addition, have cervical myelopathy.

This condition may explain some of the spurious signs and hitherto inexplicable neurological features discovered in the healthy and the diseased state.

I am grateful to the physicians of the department of medicine, Postgraduate Medical School, for allowing me to publish their cases, and to Dr. Hugh Davies who kindly carried out most of the myelography.

References overleaf

OSTEO-ARTHRITIS DEFORMANS OF THE LUSCHKA JOINTS

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With illustrations on plate

IT is currently fashionable to ascribe a significant proportion of cases of cervico-brachial neuritis to a herniation or protrusion of the cervical intervertebral discs, in particular to an alleged lateral (or dorsilateral) protrusion of disc tissue into the intervertebral foramen (Frykholm 1951, Brain et al. 1952, Brain 1954). The present paper directs attention to a more obvious and ubiquitous cause—namely, a deforming osteo-arthritis of the joints of Luschka (neurocentral joints), a disease which constitutes, in our opinion, the commonest mechanical cause of cervical nerve-root irritation.

Previous authors have described Luschka-joint osteo-arthritis and its sequelæ, without, however, gaining much notice or modifying a persistent preoccupation with disc lesions.

Thus, Braun (1875) and Thoma (1931) recognised neuro-central apophysitis as likely to compress the blood-vessels of the cervical spinal nerves, with resultant œdema or congestion of the nerves; and Elliott (1926) knew that "spinal arthritis" could produce radicular symptoms by an osteophytic narrowing of the cervical intervertebral foramen. Giraudi (1931) described the characteristic radiological appearances of Luschka-joint disease (his "arthrosis deformans intervertebralis") and stressed the important relation of the neurocentral apophysis to the spinal nerve. Rathcke (1934) and Güntz (1937) denied the validity of Luschka's joints, but recognised in the same situation "exostoses" which they believed not to differ from vertebral exostoses elsewhere. Krogdahl and Torgersen (1940) confirmed the distortion and narrowing of the cervical intervertebral foramen by apophyseal exostosis and emphasised the likelihood of direct pressure by osteophytes on the contained nerve and its vessels and even upon the vertebral artery and nerve.

Our own studies convince us that the Luschka articulations are constant, normal, and necessary features of the cervical spine: that they are commonly the seat of an osteo-arthritis which always tends to distort the intervertebral foramen, with or without involvement of its contents (figs. 2b, 3b, and 4): and that the neuritis supposedly resulting from lateral herniation of the intervertebral disc is attributable rather to angulation, irritation, or compression of the cervical spinal nerve by an osteo-arthritic Luschka joint.

Our study is based upon the examination of the bony changes in a series of 50 macerated cervical spinal columns of known age and sex (see table), upon the detailed dissection of a further 10 adult cervical spines with particular reference to articular and disc changes, and upon the clinical and radiological examination of unselected patients attending the surgical outpatient department of St. Bartholomew's Hospital with symptoms or signs of cervico-brachial neuritis. A selection of typical case-histories is given below.

Anatomy

The Luschka Joints

The *Halbgelenke* of Luschka (1858) are bilaterally and obliquely disposed paradiarthroses, situated between the axis and third vertebra and between each of the succeeding cervical vertebræ. By permitting the all-important movements of lateral flexion and rotation, they give the neck its characteristic mobility. The articular surfaces of each joint are formed by (1) the neurocentral apophysis (eminentia costarum, Luschka; processus uncinatus, Trolard) below and (2) the inferolateral aspect of the vertebral body above. The apophysis exhibits medially an anterior non-articular area (in contact with the disc) and a posterior articular area. Each apophysis, with its attached capsular ligament, forms the anteromedial parietes of the cervical intervertebral foramen and each must restrain the disc from protrusion into the foramen (fig. 3c). The joint cavity (which is constant) is limited medially by the periphery of the disc, laterally by a distinct capsular ligament.

The Cervical Intervertebral Foramen

This foramen is essentially a short canal, bounded ventromedially by the Luschka joint, dorsolaterally by the contiguous cervical articular pillars and intervening zygapophyseal joint, and superiorly and inferiorly by the relevant intervertebral (pedicular) notches (figs. 1a and 2a). At the medial extremity of the foramen the anterior and posterior nerve-roots (the latter bearing its ganglion) unite to form the mixed spinal nerve, which, 1 cm. or less in length, rapidly divides into ventral and dorsal primary rami. The spinal nerve is nothing more than the anterior and posterior nerve-root fibres undergoing rearrangement into primary rami. The vascular pia arachnoid invests the respective nerve-roots (as the "root sleeves" of some writers) as far at least as the medial extremity of the foramen: the protective spinal dura continues distally over the roots (the so-called "root pouch") and the ganglion to become continuous with the perineurium of the spinal nerve. The intervertebral foramen (figs. 1a, 2a, and 3a) is large relative to its contained spinal nerve: it is also occupied by small

DR. CLARKE: REFERENCES

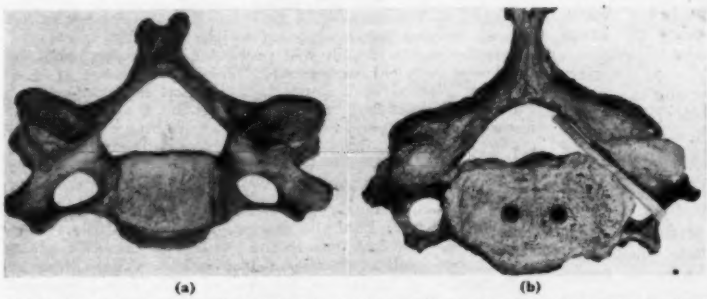
Allen, K. L. (1952) *J. Neurol. Neurosurg. Psychiat.* **15**, 20.
Barnes, R. (1948) *J. Bone Jt Surg.* **30B**, 234.
Bauer, F. (1953) *J. Laryng.* **67**, 615.
Beadle, O. A. (1931) The Intervertebral Discs: Observations on their Normal and Morbid Anatomy in Relation to certain Spinal Deformities. *Spec. Rep. Ser. med. Res. Coun., Lond.* no. 161.
Bedford, F. D., Bosanquet, F. D., Russell, W. R. (1952) *Lancet*, ii, 55.
Brain, W. R. (1954a) *Ibid*, i, 687.
— (1954b) *Rev. neurol.* **90**, 209.
— (1954c) *Ann. intern. Med.* **41**, 439.
— Northfield, D., Wilkinson, M. (1952) *Brain*, **75**, 187.
Bucy, P. C., Heimburger, R. F., Oberhill, H. R. (1948) *J. Neurosurg.* **5**, 471.
Clarke, E., Robinson, P. K. (In preparation).
Frykholm, R. (1951) Cervical Nerve Root Compression resulting from Disc Degeneration and Root-sleeve Fibrosis: a Clinical Investigation. *Acta chir. scand.* suppl. 160.
Garland, A., Tavernier, D. (1953) *Brit. med. J.* i, 1405.
Gilliatt, R. W., Wilson, T. G. (1953) *Lancet*, ii, 595.
Girard, P. F., Garde, A., Devic, M. (1954) *Rev. neurol.* **90**, 48.
Gros, C., Temple, J. P. (1953) *Sem. Hôp.* **29**, 1097.
Guillaume, J., Caron, J. P. (1954) *Pr. méd.* **62**, 1089.
Horwitz, T. (1940) *Arch. intern. Med.* **65**, 1178.
Hult, L. (1954) The Munkfors Investigation. *Acta orthopæd. scand.* suppl. 16.
Jager, W. A. den H., Moffie, D. (1949) *Folia psychiat., Amst.* **52**, 137.
Kaplan, L., Kennedy, F. (1950) *Brain*, **73**, 337.
Kuhlendahl, H., Kunert, W. (1954) *Die Medizinische*, no. 14, p. 449.
Lassek, A. M. (1944) *Arch. Neurol. Psychiat., Chicago*, **52**, 484.
Liversedge, L. A., Hutchinson, E. C., Lyons, J. B. (1953) *Lancet*, ii, 652.
Mair, W. G. P., Druckman, R. (1953) *Brain*, **76**, 70.
Masson, R., Devic, M. (1949) *J. Méd. Lyon*, **30**, 619, 705.
Moodie, R. L. (1923) Paleopathology: an Introduction to the Study of Ancient Evidences of Disease. Urbana, Illinois.
Morton, D. E. (1950) *Yale J. Biol. Med.* **23**, 126.
Müller, R. (1951) *Acta med. scand.* **139**, 85.
Pallis, C., Jones, A. M., Spillane, J. D. (1954) *Brain*, **77**, 274.
Ricard, A., Masson, R. (1951) *Rev. neurol.* **85**, 420.
Ruffer, M. A., Rietti, A. (1912) *J. Path. Bact.* **16**, 439.
Savitsky, N., Madonick, M. J. (1943) *Arch. Neurol. Psychiat., Chicago*, **49**, 272.
Schmorl, G., Junghanns, H. (1932) Die Gesunde und Kranke Wirbelsäule im Röntgenbild: pathologischen anatomische Untersuchungen. Leipzig.
Semmes, R. E., Murphey, F. (1954) *Surg. Clin. N. Amer.* **34**, 1095.
Spillane, J. D., Lloyd, G. H. T. (1951) *Lancet*, ii, 653.
— — (1952) *Brain*, **75**, 177.
Stookey, B. (1940) *Arch. Surg., Chicago*, **40**, 417.
Strully, K. J., Gross, S. W., Schwartzman, J., von Storch, T. J. C. (1951) *J. Amer. med. Ass.* **146**, 10.
Tarlov, I. M. (1954) *Arch. Neurol. Psychiat., Chicago*, **71**, 588.
Taylor, A. R. (1953) *Lancet*, i, 717.
Trowbridge, W. V., French, J. D. (1954) *Neurology*, **4**, 339.
Walshe, F. M. R. (1944) *Lancet*, ii, 173.
— Ross, J. (1936) *Brain*, **59**, 277.

INCIDENCE OF LUSCHKA-JOINT OSTEO-ARTHRITIS IN 50 MACERATED CERVICAL SPINES

Age and sex	Jt. 3/4		Jt. 4/5		Jt. 5/6		Jt. 6/7		Age and sex	Jt. 3/4		Jt. 4/5		Jt. 5/6		Jt. 6/7	
	R	L	R	L	R	L	R	L		R	L	R	L	R	L	R	L
F 30	–	–	–	–	–	–	–	–	M 59	–	(+)	–	–	–	(+)	–	–
F 31	–	–	–	–	–	–	–	–	M 59	–	–	+	+	+	+	+	+
F 32	–	–	–	–	–	–	–	–	M 60	+	+	–	–	–	–	–	–
M 33	–	–	–	–	–	–	–	–	M 60	–	–	–	–	(+)	+	(+)	+
M 34	–	–	–	–	–	–	–	–	M 60	–	–	(+)	–	++	+	–	+
F 35	–	–	–	–	–	–	–	–	M 60 +	+	+	–	–	–	–	–	–
F 35	–	–	–	–	–	–	–	–	M 61	+	+	(+)	(+)	–	–	+	+
F 36	–	–	–	–	–	–	–	–	M 62	(+)	(+)	–	–	++	++	++	+
M 37	–	–	–	–	–	–	–	–	M 62	+	–	+	+	+	+	+	+
M 40	–	–	–	–	–	–	–	–	M 63	–	–	(+)	(+)	(+)	(+)	–	–
M 42	+	+	–	–	–	–	–	–	M 63	(+)	(+)	–	–	–	–	–	–
M 43	–	–	–	–	–	–	–	–	M 64	–	+	–	–	++	+	++	–
M 44	–	–	–	–	–	–	–	–	M 64	–	+	–	+	–	–	+	+
M 45	–	–	–	–	–	–	–	–	M 65	–	–	++	++	++	++	–	+
F 46	–	–	–	–	–	–	–	–	F 66	–	+	–	–	–	–	+	–
M 48	+	+	+	+	++	++	(+)	(+)	M 66	++	++	+	–	–	+	–	–
M 49	–	–	–	–	–	–	–	–	M 66	+	–	–	–	–	–	–	–
M 50	–	–	+	+	+	+	–	–	M 69	+	–	+	+	+	+	+	–
F 51	–	–	+	+	–	–	–	–	M 70	–	+	–	++	–	++	+	+
M 55	–	–	+	+	–	+	–	–	M 72	–	–	+	+	+	+	–	–
M 56	+	++	+	–	–	+	+	–	M 73	++	++	++	++	+	+	+	+
M 56	–	–	–	–	–	–	–	–	M 75	+	+	–	–	–	–	–	–
M 56	–	–	+	+	+	+	+	++	M 77	+	–	+	+	+	+	(+)	(+)
M 58	–	–	–	–	+	–	–	–	M 77	–	+	–	–	+	+	–	–
F 58	–	–	+	+	++	+	(+)	+	M 81	++	++	++	++	++	+	+	–

+ = distortion of neurocentral apophyses and of intervertebral canal. (+) = mild degree of distortion. ++ = severe degree of distortion.

entrant arteries, an abundance of veins, and much soft semi-fluid extradural fat. The cervical nerve is thus amply accommodated and is well protected against possible compression during movement. Its position within the foramen remains constant save for a slight cranial shift during flexion. But it lies in intimate and vulnerable contact with the Luschka joint (fig. 3c), deformation of which is invariably dorsilateralwards—i.e., into the medial end of the intervertebral foramen. Such deformation and encroachment into the foramen produces a considerable abnormal angulation of the nerve-root, causing irritation, and even compression, of the root fibres and their sheaths.



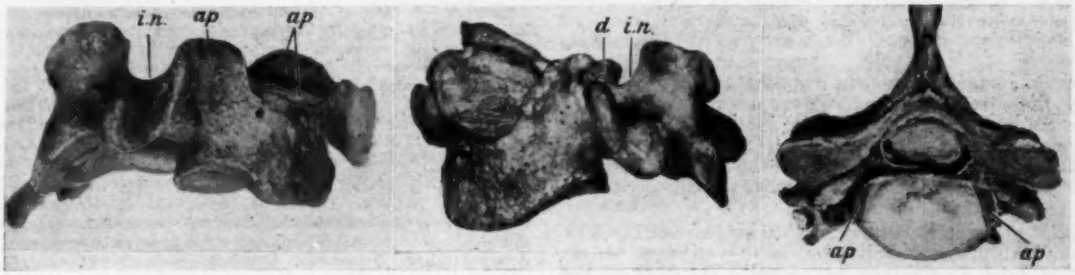
(a) (b)

Fig. 2—(a) Normal cervical vertebra (cranial aspect) showing capacious intervertebral (pedicular) notches; (b) cervical vertebra (cranial aspect) showing narrowing of intervertebral notches by osteo-arthritis of the Luschka articulations.

Pathology

The characteristic lesion is an "osteo-arthritic" deformity of the neurocentral joint, with consequent bony encroachment upon the intervertebral foramen and a compression-angulation of the contents of the foramen. The articulating surfaces concerned are generally distorted (pitted and eburnated), enlarged, and splayed laterally towards, or into, the medial end of the intervertebral canal (figs. 1b, 2b, 3b, and 4). These changes may be the only abnormality present throughout the entire cervical column, as the majority of our specimens and cases show. Very occasionally (in 0·8% of our cases) concomitant osteo-arthritic change in the cervical zygapophyseal joints still further occludes the intervertebral foramen, but it can be dismissed as a factor of any importance in distorting the foramen.

Osteophytic senile "lipping" of the caudal borders of the cervical vertebral bodies may co-exist with Luschka-joint arthritis, for both are equally characteristic of the later decades of life; but this is only a fortuitous asso-



(a) (b) (c)

Fig. 3—(a) Normal cervical vertebra (right lateral aspect) showing wide intervertebral notch (*i.n.*) and height of neurocentral apophysis (*ap*); (b) cervical vertebra (left lateral aspect) showing distortion (*d*) of Luschka-joint apophysis and consequent narrowing of intervertebral notch; (c) normal cervical vertebra (caudal aspect) with apophyses (*ap*) of subjacent vertebra in situ, to show intimate relation of apophyses to intervertebral canals and contents (dissected on left, undissected on right) and to intervertebral disc.

ciation, since neurocentral apophyseal osteo-arthritis may occur in the absence of vertebral lipping, and the converse may also be true. This lipping is more like an attempted ossification of the anterior common ligament; and we know no valid evidence that it is a cause of protrusion of the intervertebral disc.

Senile shrinkage of the cervical intervertebral disc may be a cause of Luschka-joint arthritis. In patients and cadavers of early middle life the disc often shows no detectable diminution in height (thickness): and radiography and dissection show that any abnormality present is confined to the neurocentral joints. In later life, however, there is a varying degree of shrinkage of the disc, as part of the general vertebral changes of senile atrophy. The precise cause of the osteo-arthritis which deforms the neurocentral joints remains obscure, as does the cause of osteo-arthritis elsewhere in the spinal column. Shrinkage of the disc may be at least a predisposing or precipitating cause; for if the neurocentral arthritis results from a disturbance of the joint's normal mechanics, then shrinkage of the disc may help to produce arthritis by bringing a given neurocentral apophysis into abnormally extensive contact with the superjacent vertebral body.

Nevertheless it is clear that there is no constant correlation between the degree of disc shrinkage and the distribution and severity of neurocentral osteo-arthritis. Thus, 5 of the 12 patients described in the accompanying case-histories showed shrinkage in (usually) the lower neck, but in 2 only of these could any plausible connection be established between the shrinkage and the localisation and severity of the disease. And, significantly, the adjacent zygapophyseal joints were normal.

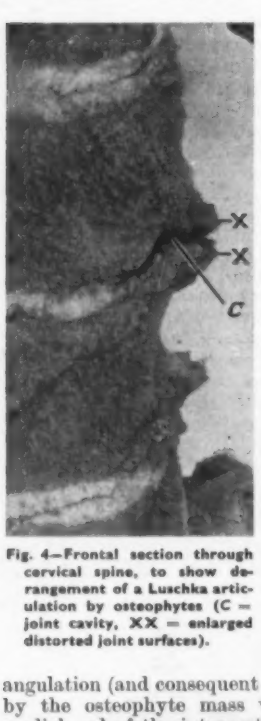


Fig. 4—Frontal section through cervical spine, to show derangement of a Luschka articulation by osteophytes (C = joint cavity, XX = enlarged distorted joint surfaces).

Radiology

In all our patients lateral oblique films of the cervical spine showed some encroachment upon the intervertebral foramina by osteophytes from the Luschka joints (fig. 1b). Usually a number of foramina were narrowed, generally bilaterally; only once was a single foramen affected. The precise degree of narrowing was not related directly to the severity of the disease, for symptoms result, not from compression by osteophytes, but from excessive angulation (and consequent irritation) of the spinal nerve by the osteophyte mass where the nerve enters the medial end of the intervertebral foramen. This angulation and irritation of the cervical spinal nerves is comparable to that first recognised, though on a different mechanical basis, for the lumbar spinal nerves by O'Connell (1943).

Not every neck with radiological evidence of Luschka-joint arthritis necessarily gives rise to symptoms. On the other hand, in every patient in our series (they all had cervico-brachial neuritis) radiological evidence was invariably present. Radiology, therefore, can confirm suspected Luschka-joint lesions, but it gives no guide to the severity of symptoms.

Zygapophyseal osteo-arthritis was also present in only 1 instance. This disease produces no symptoms and its occurrence merely emphasises the fact that, in the neck, where the intervertebral foramen is very capacious, narrowing of the foramen does not, per se, produce symptoms. A foramen may be considerably narrowed and yet there are no symptoms: to produce symptoms there must be irritation of a spinal nerve by abnormal angulation over (behind) a distorted Luschka articulation.

In a third of our clinical cases the cervical discs were found radiologically to have shrunk, as expected, with age; in the remainder the discs were unchanged in depth. The discs most often affected were 5/6 and 6/7—that is, the discs situated where cervical movement is greatest.

Anterior lipping of the cervical vertebral bodies and ossification of the anterior common ligament, seen in a few cases, are unrelated phenomena due to age.

Illustrative Cases

In these examples vascular lesions such as Raynaud's disease and vertebro-costal anomalies (cervical rib, reduced first rib) were excluded.

CASE 1.—A woman of 64 had had three months' pain along the radial border of the right arm, with paræsthesia of 1st, 2nd, and 3rd digits: pain was accentuated by ipsilateral cervical movement (rotation, lateral flexion). Sensation was diminished in the distribution of the median nerve in the right hand. There was no muscle wasting, but definite weakness of the grip. X-ray examination showed that Luschka osteo-arthritis was present in C5–7, and there was diminution in height of disc 6/7.

CASE 2.—A woman of 53 gave one month's history of left lateral cervical pain, radiating to the shoulder and supraclavicular region: pain was persistent and accentuated by ipsilateral cervical movement. There was spasm of deep cervical muscles and consequent restriction of movement. Cutaneous sensibility was diminished in the area of the anterior primary rami of C3 and 4. No motor changes were demonstrable. Radiologically Luschka osteo-arthritis was present in C3–6, and the disc space C6/7 was diminished. There was some ossification of the anterior common ligament.

CASE 3.—A woman of 49 had had several years' pain in the left index and middle fingers, with paræsthesia. More recently she had had pain in the left side of the neck, accentuated by ipsilateral cervical movement. There was no disturbance of cutaneous sensibility. The left biceps-jerk was diminished, and the left thenar muscles were wasted and weak. Radiography showed marked Luschka osteo-arthritis in C3–7. The disc spaces were unchanged.

CASE 4.—A man of 42 gave a history of nine months' pain, starting in the neck and left shoulder and later radiating along the radial border of the forearm: pain was accentuated by ipsilateral cervical movement. Cutaneous sensibility was diminished over the greater part of the extensor aspect of the left forearm. There was no muscle spasm, wasting, or weakness in the neck or arm. Incipient Luschka osteo-arthritis was seen in C3–7 in X-ray films. The disc spaces were unchanged.

CASE 5.—A man of 50 had had one year's pain over the left shoulder and in the left supraclavicular region, radiating to the radial border of the upper limb and accentuated by ipsilateral cervical movement. Recently pain had begun in the cutaneous distribution of C2 and 3, and there was paræsthesia of the left thumb and index finger. The left triceps-jerk was diminished. Muscle wasting and weakness were absent. Radiography showed Luschka osteo-arthritis in C4–7. The disc spaces were unchanged.

CASE 6.—A woman of 62 had had right cervical pain for six weeks, radiating to the shoulder and accentuated by ipsilateral cervical movement. She had spasm of the cervical muscles on waking. No motor or sensory changes were demonstrable. There was Luschka osteo-arthritis in C3. The disc spaces were normal.

CASE 7.—A woman of 63 had had pain in the right posterior triangle and shoulder for six weeks: it was accentuated by ipsilateral flexion and contralateral rotation. There was no paræsthesia and no muscle wasting in the neck or arm. The

right scaleni showed intermittent spasm. On X-ray examination, Luschka osteo-arthritis was seen in C3–6. The disc spaces were diminished (from senile atrophy) below C1, and there was much lipping of C3–7 and ossification of the anterior common ligament between C6 and 7.

CASE 8.—A man of 49 had had several weeks' pain radiating from the lower neck over left shoulder, with occasional severe exacerbations. Residual pain was accentuated by ipsilateral cervical movement. There were no other symptoms and no physical signs. Luschka osteo-arthritis was present in C3–6. The disc spaces were undiminished.

CASE 9.—A woman of 58 gave a history of numbness, weakness, and pain in the right upper limb, chiefly along the radial border of the forearm. Pain was worse at night, and accentuated by contralateral cervical movement. She had paræsthesia and weakness of the right hand, and loss of sensation to pinprick in the distribution of the ulnar nerve in the same hand, but no cervical pain. The right triceps-jerk was diminished. Luschka osteo-arthritis was visible in C4–7, and the disc space 6/7 was diminished.

CASE 10.—A woman of 51 had had ten years' pain in the right side of the neck radiating over the right shoulder and involving the radial border of the right forearm: pain was increased by ipsilateral cervical movement. She was unsuccessfully treated by periodic manipulation at an osteopathic clinic. Recently pain had spread to the left side of the neck, but had not extended to the left upper limb. She had paræsthesia of the right hand. The right triceps-jerk was diminished. Luschka osteo-arthritis was seen in the radiograph in C4–6, and there was slight antero-inferior lipping of C5–7. The disc spaces were unchanged.

CASE 11.—A man of 56 had had several weeks' "pins and needles" in the left side of the neck to the point of the left shoulder. Luschka osteo-arthritis was visible in C3–7, and concomitant zygapophyseal osteo-arthritis of C3 further assisted narrowing of the intervertebral foramen. The disc spaces were normal.

CASE 12.—A woman of 45 gave a history of four years' pain over the right shoulder and supraclavicular region, with a recent history of one month's pain along the radial border of the right forearm, worse at night and on contralateral cervical movement. She had occasional paræsthesia of the right hand. There were no physical signs. Radiographically Luschka osteo-arthritis was present in C3–6. The disc spaces C5/6 and 6/7 were diminished, with pronounced antero-inferior lipping of C5–7 bodies.

Clinical Features

Osteo-arthritis of the Luschka joints is a common disease of insidious onset, declaring itself most often in the fifth and sixth decades of life (see table), but beginning not infrequently in the fourth. As with osteo-arthritis elsewhere, it is progressive, and an increasing number of Luschka joints become involved in the later decades and the individual distortion of each joint becomes more pronounced. Trauma is not a cause, and characteristically the cervical zygapophyseal joints are normal. The clinical picture is a cervico-brachial neuritis, of "high," "low," or "mixed" variety, involving the roots of the cervical or the brachial plexus or of both. The syndrome, which is typical of a mechanical irritation of the cervical nerve-roots, includes, in order of importance, pain, paræsthesia, diminished sensation to pinprick, diminished reflexes, muscle weakness, and, rarely, muscle wasting.

Constant pain is always a symptom, and is the usual cause of relief being sought. It most commonly radiates down the radial border of the arm and forearm (in the distribution of C5 and 6) and it is very often associated with a similar kind of pain in the neck (distribution of C3 and 4). Characteristically, such pain is intensified by the ipsilateral (sometimes contralateral) cervical movement of lateral flexion and rotation, but is unaffected by pure flexion, pure extension, or rotation at the atlanto-axial articulations. It is often, therefore, worse on waking, because of unconscious cervical movements during sleep. The onset of symptoms may be sudden or gradual, and in either case subject to remissions lasting for periods of up to six months or longer.

Paræsthesia is also present in about 75% of patients and usually affects the hand (thumb, index, and middle fingers).

Physical signs are less obtrusive. Some one-third of patients have diminished sensation to pinprick or a diminished triceps reflex: less than one-third show weakness of the hand muscles or thenar wasting. Spasm of the scaleni and deep cervical muscles may be present.

Diagnosis depends on (1) the nature and distribution of the pain and/or paræsthesia; (2) intensification of pain on cervical movement (generally ipsilateral); (3) the mode of onset and remissions; (4) the age of the patient; and (5) confirmation by lateral oblique radiographs of the neck.

Treatment

Obviously, neurocentral apophysectomy of the affected joints is the only means of permanent cure, but how practicable such an operation may prove when a number of Luschka joints are involved we are not competent to say. Palliative therapy, apart from analgesics, includes long courses of short-wave diathermy (which may induce a remission) and immobilisation of the cervical spine by, for example, a plastic or plaster collar splint (which may afford relief during acute phases). In our opinion, neck traction or manipulation is valueless and is likely to aggravate symptoms.

Summary

Osteo-arthritis of the cervical neurocentral (Luschka) joints is described from anatomical and clinical material, with special reference to its ubiquity and age-incidence.

The disease is shown to be responsible for narrowing of the intervertebral foramina with consequent angulation and mechanical irritation of the cervical spinal nerve-roots.

We tender our appreciation to Mr. D. F. Ellison Nash and to Mr. Alan H. Hunt for permission to examine patients under their care at St. Bartholomew's Hospital, and to Dr. R. A. Kemp Harper for radiographic facilities in the hospital. The photographs are the work of Mr. A. E. Westwood.

REFERENCES

Brain, W. R. (1954) *Lancet*, i, 687.
— Northfield, D. W. C., Wilkinson, M. I. P. (1952) *Brain*, **75**, 187.
Braun, J. (1875) Klinische u. anatomische Beit. z. Kenntnis der spondylitis deformans. Hanover.
Elliott, G. R. (1926) *J. Bone Jt Surg.* **8**, 42.
Frykholm, R. (1951) *Acta chir. scand.* suppl. 160.
Giraudi, G. (1931) *Radiol. med.* **18**, 1457.
Güntz, E. (1937) *Z. Krüppelfürs.* **30**, 84.
Krogdahl, T., Torgersen, O. (1940) *Acta radiol. Stockh.* **21**, 231.
Luschka, H. von (1858) Die Halbgelenke des menschlichen Körpers. Berlin.
O'Connell, J. E. A. (1943) *Brit. J. Surg.* **30**, 315.
Rathcke (1934) *Dtsch. Z. Chir.* **242**, 122.
Thoma, E. (1931) *Z. orthopäd. Chir.* **55**, 115.

THE ONYCHODERMAL BAND IN HEALTH AND DISEASE

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With illustrations on plate

EACH nail-bed has two clearly differentiated zones—the half-moon, and the larger distal pink area. On close examination, a third zone can often be identified in normal people: it forms a barely perceptible pale narrow band, and runs transversely across the distal portion of the nail-bed, immediately proximal to the free edge of the nail. I call it the "onychodermal band," and the rest of the pink area I call the "main pink zone."

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The main pink zone may become whitened (especially in hepatic cirrhosis), giving the appearance known as "white nails" (Terry 1954a); and the half-moons may become reddened, especially in chronic heart-failure in older persons (Terry 1954b). Since it seemed likely that the onychodermal bands too would be affected in some disorders, special attention was given to them in all further observations upon the nails; and changes were in fact encountered, although much less often than in the other two zones. The purpose of this paper is to describe the appearance of normal and abnormal onychodermal bands, and to discuss their significance.

The Onychodermal Band in Health

In the finger-nails the onychodermal band is usually 0·5–1·5 mm. wide, but there are many exceptions. Commonly the band is narrower and less apparent in the thumb-nail (unlike the half-moons, which are more prominent in the thumbs). The band is paler than the main pink zone, and has a slightly amber tinge and a faintly translucent quality; in Negroes, it sometimes has a trace of brown pigmentation. Often a fine transverse white line may be made out at the junction of the band and the main pink zone. These appearances are difficult or impossible to see unless the fingers are pointing directly at a good source of light, preferably the sun.

The Onychodermal Band in Disease

Of 2500 patients in general medical and surgical wards, 9 had onychodermal bands which were much more prominent than usual, the prominence resulting from an exaggeration of the characteristics of a normal band. These abnormal bands were readily visible from a distance of at least four feet. Though their whiteness did not possess the ground-glass quality of the half-moons, it did preserve both the suggestion of pale amber and the translucent quality. In 1 patient the bands were ivory-coloured; this patient had generalised keratosis. Squeezing blood into the finger-tip did not diminish the onychodermal band; indeed the contrast between the band and the congested main pink zone was accentuated.

These 9 patients consisted of 5 with hepatic cirrhosis, 1 with thyrotoxicosis (fig. 1), 1 with pulmonary eosinophilia, 1 with malnutrition, and 1 with keratosis.

In 3 of the patients with hepatic cirrhosis there were also "white nails." This was interesting, since the juxtaposition of the abnormal onychodermal bands and the opaque main pink zones permitted the two conditions to be readily compared. The opacity of the main pink zones stopped short of the abnormal onychodermal bands; and in each nail there was a narrow pink line of normal nail-bed intervening between the onychodermal band and the "white nail" (fig. 2). The ground-glass opacity of the "white nails" had none of the faintly pigmented and translucent quality of the opaque bands; and this difference is apparent in monochromatic as well as polychromatic reproductions.

In a recent description of "white nails" (Terry 1954a), I remarked that the whiteness usually terminated 1·0–2·0 mm. short of the distal edge of the nail-bed, and I termed this narrow unaffected area the "distal pink zone." It is now apparent from further studies on "white nails" that the distal pink zone is formed by the onychodermal band.

Changes in the onychodermal bands were also noticed in 2 patients with paronychia. At the onset of the infection the bands were not remarkable. Following resolution of the infection, there was desquamation of the skin of the terminal phalanx; and when this reached the distal portion of the nail, the bands became increasingly opaque and finally assumed a dense white colour without either pigmentation or translucency (fig. 3). Thus opaque onychodermal bands have been seen in both local and general skin disorders.

Anatomy

Examination of the under surface of a dry excised nail is instructive. In the region of the main pink zone, the nail has a rough, unpolished appearance, while in the areas corresponding to the half-moon and the onychodermal band, the nail is smooth and shiny. Where the rough area joins the smooth areas, small ragged fringes may often be seen. The superficial layer of the nail-bed is apparently attached firmly to the nail only in the region of the main pink zone. Hence, when the nail is excised, the superficial layer of the nail-bed is also removed, giving it a rough appearance; whereas in the region of the onychodermal band (and of the half-moon), the superficial layer remains attached to the nail-bed.

This loose attachment of the onychodermal band is demonstrated in everyday life by people who use pointed nail-files to clean their nails: if they are clumsy they may separate the nail from the onychodermal band. Another common cause of separation of the nail from the band is nail-biting, which causes the onychodermal bands to disappear. Separation of this type is painless, in contrast with the painful separation of the nail from the main pink zone. This can be demonstrated more dramatically with a needle: the point of the needle can be inserted between the nail and the onychodermal band without discomfort; but, immediately the proximal edge of the band is crossed and the main pink zone entered, exquisite pain is experienced.

The onychodermal band offers some slight resistance to pathological processes in the main pink zone. Thus in the main pink zone small hæmatomata and abscesses have been observed to have straight distal borders where they were being temporarily obstructed by the onychodermal band. As the abscess grows, it spreads distally *under* the onychodermal band. On the other hand, the small hæmatoma grows out with the finger-nail, comes to lie *superficial* to the onychodermal band, and may be scraped away from the under surface of the free edge of the nail. The reason for the different behaviour of small abscesses and small hæmatomata is not clear.

Fig. 2 provides further proof of the difference between the onychodermal band and the main pink zone. In the centre of one nail there were several longitudinal ridges, the result of an injury many years previously. Under this strip of ridges, the opacity of the "white nail" was replaced by the normal pinkness of the main pink zone; but the abnormal opaque onychodermal band remained unaltered by the ridges.

The onychodermal band apparently has a different blood-supply from the rest of the nail-bed. If the point of the finger is pressed gently, there is blanching of the band and also of a small area of the nail-bed proximal to the band. If this is repeated several times, the band flushes. Pressure on the centre of the dorsum of the nail, on the other hand, causes blanching of the main pink zone but not of the onychodermal band. No injection studies have been made.

Discussion

There seem to be many reasons for thinking that the onychodermal band is related more to the adjacent skin than to the nail-bed. It appears to have a different nerve-supply and possibly a different blood-supply; it is unaffected by a fault in the nail which affects the rest of the nail-bed; it is often pigmented in Negroes; and it is involved in various local and general skin disorders. There is a thickened area of skin under the free edge of the nail known to dermatologists as the hyponychia; it seems likely that the onychodermal band is a transitional zone between the nail-bed and the hyponychia.

The cases of opaque or abnormal onychodermal bands observed so far are too few in number to permit any serious evaluation of their significance. Since these bands have been observed in disorders known to be associated

with endocrine disorders, and since well-developed bands (though less marked than any in the abnormal group) have been seen in a few healthy subjects, one is tempted to suggest that opaque onychodermal bands may be of endocrine origin, except where the ætiology is clearly dermatological. However, the purpose of this paper is primarily to record the characteristics of abnormal onychodermal bands, in the belief that they are physical signs which should not be ignored.

Summary

A faint narrow band, the "onychodermal band," may frequently be detected running transversely across the distal portion of the nail-bed in normal people.

In certain diseases, a whitish opacity develops in the onychodermal bands. 9 examples of this condition have been observed; 5 of these were patients with hepatic cirrhosis.

Opacity of the onychodermal band constitutes a physical sign which may have clinical importance.

I am indebted to Miss Betty Gould and Mr. N. K. Harrison, of the photographic department, St. Bartholomew's Hospital, for the illustrations.

REFERENCES

Terry, R. (1954a) *Lancet*, i, 757.
— (1954b) *Ibid*, ii, 843.

A BARBITURATE ANTAGONIST

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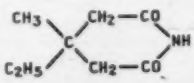
FIVE months ago Shaw et al. (1954) reported the discovery of a barbiturate antagonist, β,β-methyl-ethyl glutarimide (designated NP 13):



In rats, mice, and rabbits, NP 13 (15 mg. per kg. body-weight) antagonised pentobarbitone, thiopentone, and barbitone anæsthesia, reducing the sleeping time by half and doubling the barbiturate-depressed respiration-rate. In unanæsthetised animals, NP 13 produced fasciculations and/or generalised convulsions: with doses of 30 mg. per kg. fatal convulsions occurred in these animals. The intravenous injection of a barbiturate in appropriate dose, before or after the injection of NP 13, prevented or abolished these convulsions. During pentobarbitone anæsthesia in dogs, NP 13 (15 mg. per kg.) restored the electro-encephalographic pattern to normal, while overdose produced spikes.

In 39 cases in which suicide had been attempted by taking barbiturates, Shaw et al. (1955) significantly shortened the period of coma, using a mixture of NP 13 and 2-4-diamino-5-phenylthiazole, a morphine antagonist which is slightly antagonistic to barbiturates.

Observations

Professor Shaw kindly let me have supplies of these two substances for tests during clinical anæsthesia, and I have assessed their value in three types of case.

The *first group* consists of fifty-seven psychiatric cases in which the patient was prepared for electrical shock therapy (E.C.T.) with thiopentone 0·5 g., atropine gr. $^1/_{50}$, and *d*-tubocurarine 30 mg. The shock having been given and the attenuated clonic convulsions having subsided, the subject was decurarised with neostigmine and then given 50 mg. of NP 13 and 15 mg. of thiazole intravenously through the same needle. After the third case, thiazole was omitted and the remaining 54 cases had only NP 13. In all cases, thiopentone anæsthesia was rapidly terminated, without fasciculations or convulsions. The palpebral reflex was active within 30–60 seconds. The patients pursed their lips and bit on their airway within 60–90 seconds. They ejected their airway in about 2 minutes and talked in an inebriated fashion within 3–4 minutes. Within about 4 minutes of the injection of NP 13, the patient's state coincides with that observed 4 minutes after the completion of unprotected E.C.T., and it can be concluded that thiopentone anæsthesia is now completely abolished. The response of the next group of subjects strengthens this conclusion.

The *second group* consists of six subjects anæsthetised with thiopentone 0·5 g. and atropine gr. $^1/_{50}$ for orthopædic manipulations of the neck, spine, and hips. Here, thiopentone anæsthesia is uncomplicated by the action of additional central depressants such as E.C.T., surgical shock, and/or surgical trauma. The manipulations finished, these subjects were given 50 mg. of NP 13 intravenously. The palpebral reflex returned at once, and they pursed their lips and ejected their airway. Four of these subjects talked on the theatre table and the remaining two talked in the lift on the way back to bed.

In these two groups it was noted that, after the recovery produced by NP 13, the subject often lapsed into sleep again. But this was natural sleep; for external stimulus, such as squeezing the wrist resulted in instant awakening, with the startled response normally produced in a subject abruptly roused from natural sleep.

The *third group* consists of ten surgical cases, premedicated with hyoscine hydrobromide gr. $^1/_{150}$ and 'Omnopon' gr. $^1/_3$ and anæsthetised with thiopentone 0·5 g. and cyclopropane, with appropriate *d*-tubocurarine. In these subjects, surgical interference lasted from 10 to 45 minutes. In two urethral dilatations lasting 10 minutes and in a cystoscopy for retrograde pyelography lasting 15 minutes, recovery after 50 mg. of NP 13 was rapid: the patients talked on the theatre table or in the lift on their way back to bed. Six subjects for cystoscopy and fulguration of bladder papilloma lasting from 20 to 40 minutes, who received 50 mg. of NP 13, ejected their airway before leaving the theatre and talked within 3–7 minutes. This delay in recovery, compared with the second group, can be attributed to the duration of cyclopropane anæsthesia. After the same anæsthetic had been given for 40 minutes to a shocked patient with post-prostatectomy clot retention, the intravenous injection of 50 mg. of NP 13 produced no observable response. This can be attributed to the depressant action of cyclopropane anæsthesia and/or surgical shock.

Comments

Shaw states that NP 13 is quite innocuous; and, using doses of 50 mg. I have seen neither fasciculations nor any other side-actions. When the results in this series of seventy-three cases are considered with Shaw's results in the treatment of barbiturate coma, we may conclude that NP 13 is a barbiturate antagonist of real clinical worth. To omit to use it in the treatment of barbiturate poisoning is to run the risk of the bronchopneumonia that is so often fatal in such cases. Its use after surgical anæsthesia can be valuable but is more limited because the patient may be under the influence of central depressants other than barbiturates. In the hands of the biochemist it should prove a useful tool in investigating the nature of the affected biophase during narcosis.

I wish to thank Prof. F. H. Shaw for data and materials and Dr. N. Cass for help and advice in carrying out this trial.

REFERENCES

Shaw, F. H., et al. (1955) In the press.
— Simon, S. E., Cass, N., Shulman, A., Anster, R., Nelson, E. A. (1954) *Nature, Lond.* **173**, 402.

RECURRENT MOLLUSCUM SEBACEUM

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THOUGH molluscum sebaceum or molluscum pseudo-carcinomatosum (*Lancet* 1953) is now recognised by most British dermatologists as an entity and a benign tumour, its ætiology remains obscure. Cases have been published in which the growth disappeared spontaneously (Rook and Whimster 1950, Gordon 1950, Beare 1953, Halnan 1953), but I have not been able to find any published report of a molluscum sebaceum which, having been observed to disappear spontaneously, grew again on the same site; nor any reference to occasional rapid and very alarming increase in size of the tumour after surgical interference. These two features may be of value in any discussion on the ætiology of molluscum sebaceum and certainly will have to be explained by any hypothesis put forward to explain the causation. The following case-reports may therefore be of interest.

Case-reports

Case 1.—A woman, aged 62, attended the skin department of the Royal Victoria Hospital, Belfast, on April 1, 1953, with a typical molluscum sebaceum about 1 cm. in diameter on the back of her left hand (fig. 1*a*). The lesion had been present for six weeks. The patient had no complaint other than that occasionally this nodule was painful when injured. It was decide to leave this tumour untreated, and photographs showing its spontaneous disappearance were taken. The clinical diagnosis was so obvious that a biopsy was not regarded as essential. The patient was most coöperative and attended the department regularly.

Progress.—On April 15, 1953 (eighth week), there was very little change, except that the central keratin plug was a little larger (fig. 1*b*). On May 27, 1953 (fourteenth week), the keratin plug was much larger and lifted off readily, and the peripheral part of the lesion showed early resolution (fig. 1*c*). On June 30, 1953 (nineteenth week), the tumour was smaller still (fig. 1*d*). On Sept. 3, 1953 (twenty-eighth week) the lesion had completely disappeared but had left a puckered superficial scar (fig. 1*e*).

Recurrence.—At this stage it was thought that no further trouble need be expected, but on Sept. 30, 1953, a small papule $^1/_8$ in. in diameter was noted at the proximal margin of the scarred area, and on Oct. 21, 1953, this papule had become slightly larger and was by now another typical molluscum sebaceum (fig. 1*f*). It was considered unjustifiable to leave this alone, and the lesion was removed by simple surgical excision, thereby supplying a good biopsy specimen. Histological examination confirmed the clinical diagnosis of molluscum sebaceum and showed large amounts of well-formed keratin and pseudo-epitheliomatous hyperplasia (fig. 2).

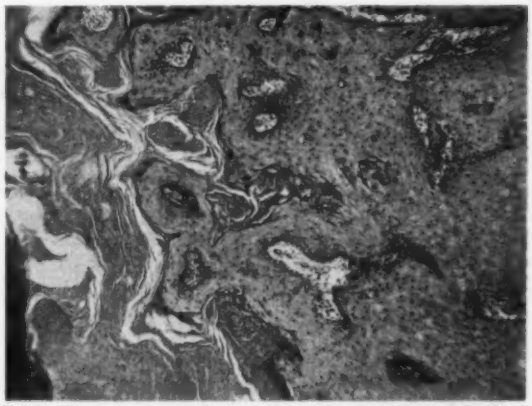

Fig. 2—Biopsy specimen of recurrent molluscum sebaceum in case 1 showing keratin and pseudo-epitheliomatous hyperplasia.

Case 2.—A man, aged 69, attended the skin department of the Royal Victoria Hospital, Belfast, on Jan. 27, 1954, with a typical molluscum sebaceum of two months' duration on his left cheek (fig. 3*a*). This was removed by simply planing off the top of the tumour with a scalpel and controlling hæmorrhage with the cautery.

Recurrence.—On Feb. 16 a lesion almost as large as the original one was present on the same site. This was at first left alone, but on March 2 it was larger than the original and on March 16 was relatively enormous (fig. 3*b*), being 3 cm. in diameter. The lymphatic glands were not enlarged. However, from a clinical point of view a diagnosis of molluscum sebaceum seemed correct, and the histological appearance of the original fragment removed on Jan. 27 was characteristic of molluscum sebaceum.

Treatment.—The recurring lesion was treated with X rays 1500r, 90 kV, 5 mA (inherent filtration 0·5 mm. aluminium) on March 16. The lesion was a little smaller on April 2, and the central keratin plug was shed on April 7. Thenceforward rapid resolution took place, and by May 26 no abnormality was apparent other than some superficial scarring (fig. 3*c*). The patient remains well.

Fig. 1—Molluscum sebaceum in case 1: *a*, April 1, 1953; *b*, April 15, *c*, May 27; *d*, July 30; *e*, Sept. 3; *f*, Oct. 21.

DISCUSSION

Since January, 1949, 122 of these tumours have been studied, including the 76 seen up to February, 1952, and already reported (Beare 1953). The standard treatment has been planing off the top and getting a biopsy specimen, followed by application of the cautery. This treatment seems to be satisfactory. Apart from

case 2, in which an alarming state of affairs developed after surgical intervention of this type, and case 1, which was not treated at all, there have been 3 other recurrences in the present series: (1) a lesion, as big as the original, recurred eight weeks after treatment and was removed by the same method, this time satisfactorily; (2) a recurrence was noted three months after curettage, cautery, and X rays 1200r, 90 kV, 5 mA (inherent filtration 0·5 mm. aluminium) and was satisfactorily removed by curettage; and (3) a small nodule recurred a month after simple planing and cautery and was satisfactorily removed by the same method.

Finney (1954) showed that these tumours can be treated with a relatively low dose of X rays—1500–1750r. The important point, now firmly established, is that the lesion usually responds to simple therapy, and that the therapeutic techniques used for the treatment of malignant skin lesions, whether surgical or radiological, are quite unnecessary and indeed undesirable. As pointed out in *The Lancet* (1954): "It is no less rewarding to save a patient with a benign lesion from the discomforts, anxieties, and dangers of treatment for cancer."

The rapid increase in size of the lesion in case 2 after surgical interference was unique in the present series but resembled the state of affairs which occasionally follows curettage of warts, especially plantar warts, when after surgical removal of a small lesion an enormous verrucous mass develops. Most of those who have treated many plantar warts have probably seen this unfortunate and embarrassing complication. Occasionally the mass which appears is too large to allow of a further attempt at surgical removal. Since plantar warts are a virus infection, it is tempting to regard molluscum sebaceum also as a virus infection. Case 1, however, would be more difficult to explain on a basis of virus infection, and attempts to reproduce the condition experimentally by injecting crude filtrates of the tumour have so far failed (Beare 1953).

a b c

Fig. 3—Molluscum sebaceum in case 2: *a*, Jan. 27, 1954; *b*, March 16; *c*, May 26.

Summary

A molluscum sebaceum disappeared spontaneously but was followed almost immediately by a recurrence on the same site.

Another molluscum sebaceum grew to an enormous size after it had been partly removed surgically.

Mr. D. H. R. Mehaffey was responsible for figs. 1–3*a*.

REFERENCES

Beare, J. M. (1953) *Brit. J. Surg.* **41**, 167.
Finney, R. (1954) *Lancet*, i, 862.
Gordon, H. (1950) *Proc. R. Soc. Med.* **43**, 838.
Halnan, K. E. (1953) *Lancet*, ii, 1358.
Lancet (1953) ii, 816.
— (1954) i, 89.
Rook, A. J., Whimster, I. W. (1950) *Arch. belges Derm.* **6**, 137.

TREATMENT OF LEAD POISONING WITH CALCIUM DISODIUM VERSENATE

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THE use of the calcium complex of ethylenediamine tetra-acetic acid (calcium disodium versenate) in the treatment of lead poisoning was first reported in 1952 (Bessman et al.). Its efficacy has been confirmed in several subsequent reports (Belknap 1952, Rubin et al. 1953, Karpinski et al. 1953, Bessman et al. 1954, Byers and Maloof 1954, Hardy et al. 1954), all relating to intravenous therapy; Sidbury et al. (1953) and Bradley and Powell (1954) have recently used an oral preparation with benefit in cases of chronic poisoning. All the reports are from the United States.

Case-report

A boy, aged $2^1/_2$, was admitted to hospital on Sept. 6, 1954. He had been chewing and sucking objects all his life, and for 6 months had been gnawing lead-covered telephone wires on the balcony of his home. 3 weeks before admission he began to have morning vomiting and to be unwontedly irritable. 2 days before admission he became listless, vomited through the day, and complained of abdominal pain. The drowsiness increased, and he apparently began to have some difficulty with micturition; but otherwise his symptoms remained unchanged until his admission.

Examination

On admission, the child was pale, ill, drowsy, and lay curled up on his side, resenting any interference. There were no other abnormal clinical signs.

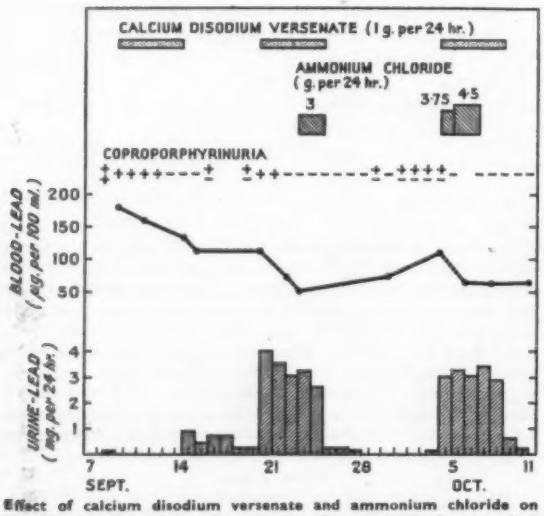
2 days after admission, immediately before the first infusion of calcium disodium versenate, a generalised convulsion took place which lasted an hour.

Investigations

In addition to the investigations recorded in the accompanying table and figure, the leucocyte-count was 15,000 per c.mm. (3 late normoblasts per 100 leucocytes), the serum-bilirubin 0·8 mg. per 100 ml., and Ehrlich's urinary urobilinogen test was positive at 1 in 20 dilution. The cerebrospinal fluid (C.S.F.) contained 3 leucocytes per c.mm. Radiographs of the long bones showed dense bands at the metaphyses, consistent with heavy metal poisoning. An electro-encephalogram showed activity at 8 cycles per sec., and, during sleep, irregular activity of moderately high amplitude at 3–5 cycles per sec. Lead poisoning was diag-

BLOOD AND CEREBROSPINAL-FLUID INVESTIGATIONS

Date	Haemoglobin (g. per 100 ml.)	Reticulocytes (per 100 red cells)	Stippled cells (per 500 red cells)	Blood-urea (mg. per 100 ml.)	C.S.F. protein (mg. per 100 ml.)
Sept. 7	8·9	5	6	51	100
„ 10	9·6	..	5	..	..
„ 14	8·1	..	< 1	..	..
„ 16	9·6	4	3	43	60
„ 21	10·4	1	3	41	..
„ 24	10·4	..	< 1	..	..
„ 29	11·1	1	< 1	46	10
Oct. 5	13·3	..	0	33	..
„ 11	11·9	1	..	37	..
„ 21	12·6	1	< 1	26	..



Effect of calcium disodium versenate and ammonium chloride on blood-lead levels and on urinary lead and coproporphyrin excretion.

nosed but treatment was withheld until a 24-hour urine sample had been collected for estimation of lead (see figure).

Treatment

Calcium disodium versenate was given intravenously at 12-hourly intervals (0·5 g. in 200 ml. of 0·18% sodium chloride in 4·3% dextrose), each infusion lasting some 2 hours. Three 5-day courses of versenate were given, with intervening rest periods of 6 and 9 days.

Progress

There were no further convulsions or vomiting after the first infusion of versenate. The volume of urine increased rapidly from 194 ml. to 1130 ml. per 24 hours. The patient's mental state improved steadily, and after 3 days he was bright and alert; he subsequently showed no further clinical evidence of lead poisoning.

The lead-levels in blood and urine, together with other serial investigations, are shown in the figure and table. Except for a few samples obtained during or immediately after a course of versenate, his urine regularly gave a green reduction of Benedict's solution; albumin and casts were not found. On Sept. 15, liver-function tests showed total protein 6·6 g. per 100 ml. (albumin 5·3 g., globulin 1·3 g.), thymol turbidity 1 unit, alkaline phosphatase 12·6 King-Armstrong units. On Oct. 1, fasting blood-sugar was 100 mg. per 100 ml. On Oct. 4, radiographs showed no change in the metaphyseal bands. An electrocardiogram on Oct. 14 was normal.

He was discharged from hospital on Oct. 17. When seen again on Oct. 21, he was clinically well and his mental state seemed normal. His urine continued to reduce Benedict's solution, and the coproporphyrin test was positive; the blood-lead had risen to 85 µg. per 100 ml. His leucocyte-count was 10,000 per c.mm. and platelets 150,000 per c.mm.; prothrombin-time was 80% normal, bleeding-time (Duke) 3 minutes, and clotting-time (Lee and White) 5 minutes; serum-calcium was 10·6 mg. per 100 ml., and serum-phosphorus 4·1 mg. per 100 ml.

Methods

Urine was collected through a length of Paul's tubing strapped to the penis and leading to a Winchester flask previously treated with lead-free nitric acid.

Coproporphyrin

Urinary coproporphyrin was tested for by taking 5 ml. of fresh urine in a test-tube and adding 2–3 drops hydrogen peroxide, 5 drops glacial acetic acid, and 1–2 ml. ether; after 10 minutes the ether layer was inspected under a Wood's lamp for the characteristic reddish-pink fluorescence.

Lead

Determinations of the lead content of 5 ml. blood and 20–50 ml. urine were carried out as recommended by the Lead Panel (1954). "Wet-ash" digestion was followed by extraction of the lead as dithizonate without using dithiocarbamate. The colour of the lead complex was measured on the Hilger absorptiometer, using the green filter (no. 604, 520 mµ). This technique, which varies only in detail from that described by Karpinski et al. (1953), determines the total lead, both in combination with versenate and free. In the first period of treatment the lead in the urine samples was unfortunately estimated by a method in which the lead is separated from the urine by co-precipitation with calcium oxalate (Blaxter and Allcroft 1950) before wet-ashing. At normal pH the lead-versenate did not co-precipitate, and therefore only the free lead was determined (it was, however, observed that if the urine was strongly acidified—e.g., with 10 ml. concentrated hydrochloric acid per litre—the lead versenate complex dissociated and all the lead was co-precipitated with the calcium oxalate). After the first period of versenate treatment both the free and total lead in the urine were determined.

For 2 to 3 days after stopping versenate, the total lead remained at a higher level than the free lead, which suggests that the excretion of lead-versenate complex continued during that period: this agrees with the observations of Hardy et al. (1954). During the second period of treatment the free lead, which in the preceding rest period had not fallen below 0·2 mg. per day, diminished to 0·05 mg. per day, although the total lead had risen at this time to between 3 and 4 mg. per day.

Discussion

Calcium disodium versenate is the calcium complex of ethylenediamine tetra-acetic acid (E.D.T.A.). E.D.T.A. is a chelating agent—i.e., a substance capable of binding multivalent metallic ions so as to cause their functional removal from solution. The stability of complexes so formed varies with the metal concerned, and a metal forming a stronger complex can replace one forming a weaker complex. Thus lead displaces calcium from the calcium disodium complex, which for this reason is used in the treatment of lead poisoning. The calcium complex must be used because E.D.T.A. alone would combine with calcium in the plasma so rapidly as to cause hypocalcæmic tetany and death (Popovici et al. 1950). Experiments on animals (Bauer et al. 1952) have shown that calcium disodium versenate causes no serious reactions; one patient of Belknap's (1952) showed transient bone-marrow depression, Bradley (1954) described T-wave changes in the electrocardiogram, and one of Sidbury's (1953) patients had abdominal pain and diarrhœa with high oral dosage, but no other definite toxic effects have been reported in man.

Dosage

Dosage has been somewhat empirical, but the recommendations of Foreman et al. (1953), based on studies in animals, are as follows: the drug should be given intravenously, and no faster than 0·5 g. per 30 lb. body-weight per hour; the daily dose should not exceed 1 g. per 30 lb. body-weight nor the weekly dose 5 g. per 30 lb. body-weight; and courses should be limited to 7·5 g. per 30 lb. body-weight given over 10 days, with 7-day rest periods between courses. Maison (1953) suggests that the drug should not be injected in a concentration higher than 3%. Bessman et al. (1954) give 0·5 g. of versenate 8-hourly for 5 days with 3-day rest periods. It is possible that such doses are unnecessarily large. Since 1 mM of calcium disodium versenate binds 1 mM of lead, 1 g. (the recommended daily dose for a child of 30 lb.) could bind 553 mg. of lead. The maximum 24-hour urinary lead excretion is, however, in all reports (except that of Hardy et al. [1954], which concerns adults) about 4 mg.; this is likely to represent almost the total lead versenate excretion, since it has been shown in rats that up to 99% of an intravenous dose of E.D.T.A. is recoverable from the urine (Foreman et al. 1953). Clearly only a minute proportion of the lead-binding capacity of the administered calcium disodium versenate is utilised, and the fact that versenate has to compete for lead with other binding agents, such as the sulphydryl groups of proteins (Bessman et al. 1954), does not entirely rob this argument of its validity. Moreover, figures quoted in other reports relating to patients who were given various doses of versenate do not suggest that either blood-levels or urinary excretions were increased by higher doses.

Response

Our patient responded to treatment in much the same way as the other reported cases. Vomiting and convulsions ceased from the time that versenate was started and the child rapidly became less irritable and more alert. The gradual disappearance of coproporphyrin from his urine and of stippled cells from the blood, the rise in hæmoglobin, and the fall in blood-urea and in C.S.F. protein are recorded in the accompanying table and figure. Urobilinogen was present only in the first sample of urine; glycosuria has persisted up to the most recent test. Although, as already mentioned, lead estimations during the first course of versenate were made by a method which does not assay lead complexed with E.D.T.A., the excretion figures for the second and third courses show clearly that the urinary output of lead was greatly increased by giving versenate. Probably this represents an increase in total lead output, since the maximum fæcal excretion observed by Aub et al. (1925) in patients with lead poisoning was only 1·86 mg. over a 3-day period; even if excretion by this route were completely suppressed during versenate therapy it would not nearly cancel out the increase in urinary excretion.

The figures for blood-lead levels show a steady fall, unlike those given in previous reports, which often showed a striking rise during versenate therapy. This may be related to the fact, noted in experiments on animals, that 60–90% of an intravenous dose of versenate is excreted within 6 hours (Foreman et al. 1953). Blood samples were (with one exception) obtained a minimum of 9 hours after each versenate infusion; if the previous workers obtained their samples during or shortly after an infusion, their results might well be different; but none of the published reports gives the information on this point.

There is ample evidence that calcium disodium versenate effectively relieves the symptoms of acute lead poisoning; moreover, comparison of the amount of lead eliminated during treatment with the fall in blood-lead levels suggests that stored lead must be removed not only from the blood but also from the tissues. Much greater quantities remain in the skeleton and elsewhere, and even after versenate treatment mobilisation may take place and acute poisoning recur (e.g., in the course of an infection or from other metabolic stress). It therefore seemed logical to try to increase the excretion of lead during versenate treatment by any available means, and, as shown in the figure, ammonium chloride was administered on two occasions. No effect was observed on urinary lead excretion: this may have been because adequate acidosis was not obtained—the blood pH fell only to 7·38, and the plasma bicarbonate to 23·2 m.eq. per litre (Oct. 6)—or because the patient was not on a low-calcium diet (Aub 1935), or because ammonium chloride was not given for long enough. The possibility of such controlled elimination of lead warrants further consideration.

Summary

The treatment with calcium disodium versenate of acute lead poisoning in a child of $2^1/_2$ is described. No toxic effects from the versenate were observed. Problems of dosage, and the interpretation of changes in blood and urinary lead content, are discussed.

Administration of ammonium chloride during versenate treatment did not increase the urinary excretion of lead.

The work was undertaken at the suggestion of Dr. R. Lightwood. The calcium disodium versenate was supplied by Riker Laboratories, Loughborough.

REFERENCES

Aub, J. C. (1935) *J. Amer. med. Ass.* **104**, 87.
— Fairhall, L., Minot, A., Reznikoff, P. (1925) *Medicine, Baltimore*, **4**, 1.
Bauer, R. O., Rullo, F. R., Spooner, C., Woodman, E. (1952) *Fed. Proc.* **11**, 321.
Belknap, E. L. (1952) *Industr. Med.* **21**, 305.
Bessman, S. P., Reid, H., Rubin, M. (1952) *Med. Ann. D.C.* **21**, 312.
— Rubin, M., Leikin, S. (1954) *Pediatrics, Springfield*, **14**, 201.
Blaxter, K. L., Allcroft, R. (1950) *J. comp. Path.* **60**, 133.
Bradley, J. E., Powell, A. M. (1954) *J. Pediat.* **45**, 297.

References continued at foot of next column

New Inventions

A NEW RIGHT ENDOBRONCHIAL TUBE

WE have designed an endobronchial tube for right-lung anæsthesia. This instrument permits ventilation of *all* the lobes of the right lung and facilitates transection and closure of the left main bronchus or of the tracheal wall.

The tube (see figure) is made of rubber and has a cross-section similar to a size 8 "streamline" Magill tube. The lower 4 cm. is angulated approximately 20°. On this angulated portion of the tube is a slot 2 cm. long and 2 mm. wide. An inflatable cuff is attached to the margins of this aperture and surrounds the remainder of this portion of the tube. A stiff rubber hook, similar to that on a Carlens tube,[1] projects from the angle of the tube opposite and 1 cm. above the slot. A second inflatable cuff, similar to that on a standard endotracheal tube, has its lower margin 2 cm. above the hook. The inflating tube of the lower cuff runs in the wall of the main tube, and that of the intratracheal cuff runs on the surface of the main tube.

The tube is passed through the larynx under direct vision and advanced blindly down the trachea until the hook is felt to impinge on the carina. The angled end of the tube will now lie in the right main bronchus. Inflation of the intratracheal cuff will help to stabilise the instrument and hold it in position. When the lower cuff is inflated it will push the slot over the right upper-lobe bronchial orifice and occlude the lumen of the right main bronchus. Now closed ventilation of the whole of the right lung may be maintained. When the left chest has been opened, the intratracheal cuff can be temporarily deflated to allow the left lung to collapse to the extent required. After closure of the left bronchial stump both cuffs may be deflated, and while aspiration is performed through the tube the latter is withdrawn into the trachea. The upper cuff is now reinflated to allow the adequacy of the bronchial closure to be tested.

Rarely the right upper-lobe bronchus arises from the trachea. In this case the tube cannot be used. Therefore all patients should be bronchoscoped to determine the nature of the bronchial anatomy.

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1. Carlens, E. *J. thorac. Surg.* 1949, **18**, 742.

DR. GILES AND OTHERS: REFERENCES—*continued*

Byers, R. K., Maloof, C. (1954) *Amer. J. Dis. Child.* **87**, 559.
Foreman, H., Hardy, H. L., Shipman, T. L., Belknap, E. L. (1953) *Arch. industr. Hyg.* **7**, 148.
Hardy, H. L., Elkins, H. B., Ruotolo, B. P. W., Quinby, J., Baker, W. H. (1954) *J. Amer. med. Ass.* **154**, 1171.
Karpinski, F. E., Rieders, F., Girsh, L. S. (1953) *J. Pediat.* **42**, 687.
Malson, G. (1953). *In* Report of Conference held at Massachusetts General Hospital. *Arch. industr. Hyg.* **7**, 137.
Popovici, A., Geschickter, C. F., Reinovsky, A., Rubin, M. (1950) *Proc. Soc. exp. Biol., N.Y.* **74**, 415.
Report of Lead Panel (1954) *Analyst*, **79**, 397.
Rubin, M., Gignac, S., Bessman, S. P., Belknap, E. L. (1953) *Science*, **117**, 659.
Sidbury, J. B., Bynum, J. C., Fetz, L. L. (1953) *Proc. Soc. exp. Biol., N.Y.* **82**, 226.

Reviews of Books

Into General Practice

A Guide for the Beginner and Others. J. G. THWAITES, M.B. London: Heinemann Medical Books. 1954. Pp. 223. 12*s.* 6*d.*

THE aspirant to general practice could fill a bedside shelf with guide-books, some of which tend to duplicate each other; but Dr. Thwaites in this non-clinical guide-book has made a distinctive and valuable contribution to the subject. He aims at telling the reader what general practice is like at present; what are its rewards and disappointments, duties, opportunities, limitations, pitfalls, and dangers; how to enter (or try to enter) it; and what to do or not to do when in. Though he by no means eschews detail, he is concerned at bottom with principles. His guide is obviously the fruit of experience and thought, and it may be commended to all who either wish or ought to know more than they do about general practice and general practitioners in this country today.

Amputations

LEON GILLIS, M.B.E., M.B. Witw'srand, M.CH. ORTH. Lpool, F.R.C.S., consultant orthopædic surgeon, Queen Mary's (Roehampton) Hospital, London. London: Heinemann Medical Books. 1954. Pp. 431. 84*s.*

ORTHOPÆDICS already covers a larger field than "general surgery," and is subdividing into specialties. Mr. Gillis intends to produce a companion volume on artificial limbs and thus to cover all the problems which arise in amputees and those about to lose a limb. He writes with the authority which his experience at Roehampton warrants, and this is certainly the most comprehensive work on amputations yet produced in this country.

By its very scope it has involved the author in some difficulties. He has included descriptions of conditions which may eventually give rise to the need for amputation, and his survey of the pathology and clinical course of so many diverse diseases is superficial and sometimes unsatisfactory. Where he restricts himself to the immediate problems of amputations and amputees he is full of wisdom which will help every orthopædic surgeon.

Particularly valuable are the chapters on amputations in children, finger amputations, phantom limbs, and other complications which can affect the stump. He has a good opinion of Syme's amputation when properly done, and recommends disarticulation at the knee as an excellent operation where indicated in children. He agrees with general opinion in decrying guillotine amputations in emergency surgery, but he only refers in passing to the procedure of fashioning flaps and retaining them in position by a single suture over a generous gauze pack which was found so valuable by forward surgeons in the 1939–45 war.

The book has many well-reproduced illustrations, though some of the radiographs are too small to show the point at issue. Doubtless many of the references were inserted to make the list complete, but a bibliography of over fifty pages seems excessive in a book of this size.

This helpful book is to be highly commended to all who have to make the onerous decisions which amputation surgery involves.

Roentgen-Diagnostics

Vol. IV. *Gastrointestinal Tract, Gynecology, Urology.* H. R. SCHINZ, W. E. BAENSCH, E. FRIEDL, and E. UEHLINGER. Translator and editor: JAMES T. CASE. London: Heinemann Medical Books. 1954. Pp. 4029. £15.

THIS is the fourth and final volume of this ponderous work on X-ray diagnosis. Like its predecessors it has beautiful illustrations and a patchy, and at times uncritical, text.

In general, the common disorders which face the practising radiologist and the student are all extremely well and elaborately described, and in this particular volume the accounts of the biliary and renal tracts are first-class. It is depressing, however, to find pages on gastric tone and gastritis, yet comparatively little on hiatus hernia. The appearances in the Plummer-Vinson syndrome and cricopharyngeus spasm get only a paragraph, while Evans's view of œsophageal arrhythmia as a cause of cardiac pain is accepted without question. In places the clinical and pathological features are not properly correlated with the X-ray findings: what is the student to think when he reads that the intestine is involved in 90% of cases of pulmonary tuberculosis and frequently in the early stages?

The translation is a literal one and in places suffers from the verbosity of the original language. The four volumes cost £60. Much will stand the test of time but much will be obsolete in ten years. The trouble with such an expensive production is that its cost almost precludes another edition within a reasonable period.

A History of Medicine

Vols. I and II. RALPH H. MAJOR, M.D., professor of medicine and of the history of medicine, University of Kansas. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1954. Pp. 1156. £5 5*s.*

THOSE who know Professor Major's *Classic Descriptions of Disease* have been looking forward to the publication of his history of medicine. We are now more than ever in his debt, for it is a splendid piece of work. It is written primarily to interest medical students and doctors in the history of their profession, "which despite attacks and abuse, despite quacks and charlatans, and in spite of its own mistakes, has proved itself more enduring than any of the civilisations which gave birth to it."

Professor Major describes the development of the healing art from prehistoric times to the middle of the 20th century, from the days of the *Pithecanthropus erectus* of Java, who lived some 500,000 years ago, down to the discovery of cortisone. His method is to describe the main stream of medical history in a connected narrative, and add at the end of each chapter a biographical section where the reader can find details of the lives of those whose achievements have been discussed. The descriptions of developments in different medical schools during limited periods are particularly good—for example, there are admirable sections on the Paris and the Irish schools and the Great Men of Guy's during the first half of the 19th century. The four hundred (often unusual) illustrations add greatly to the interest of the book and clarify many points which would be obscure from a description alone. Some are from photographs taken by the author himself in various parts of the world.

Professor Major's interest in medical history dates from his student days when he came under the spell of Osler. He shows himself a born writer, and his book is one of the best and quite the most readable of the larger histories of medicine. It is a pity that its price will prevent it from reaching the hands of most of our students, but it is worth every penny. Contrary to the author's expectation it will also appeal to medical historians.

Any Questions? (Third series. London: British Medical Association. 1954. Pp. 227. 7*s.* 6*d.*).—"I have answered three questions, and that is enough," snapped old Father William at his importunate offspring. Happily no arbitrary limit has been imposed by the *British Medical Journal*'s team of experts. In this latest series their readers' obstinate questionings—some 200 of them—relate to such diverse topics as Dryness of the Mouth after Alcohol, Head-wagging and Head-nodding in Children, and the Dangers of Aluminium Welding. Each reply embodies sound, practical advice, presented in a way that adds pleasure to the assimilation of new knowledge.

Sexual Disorders in the Male (4th ed. London: Cassell. 1954. Pp. 260. 18*s.* 6*d.*).—Mr. Kenneth Walker and Dr. E. B. Strauss, in this new edition of their book, have omitted the chapter on the surgical treatment of impotence, which they felt had become obsolete, and replaced it by a new short chapter on the concepts "male" and "female," examined in the temperate light of physiology, psychology, and anthropology. It could be read with advantage by all who wish to ignore the fundamental likenesses and the complementary rôles of the sexes. Otherwise the useful little book is much the same.

Stieglitz's Geriatric Medicine.—An English edition of this book, which was reviewed in our issue of Nov. 27 (p. 1110), has now been published by Pitman Medical Publishing Co., and the new English price is 90*s.*

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See Lancet, July 22, 1899, p. 219

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See Lancet, May 7, 1932, p. 992

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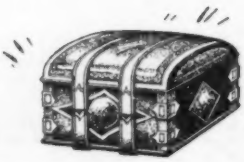

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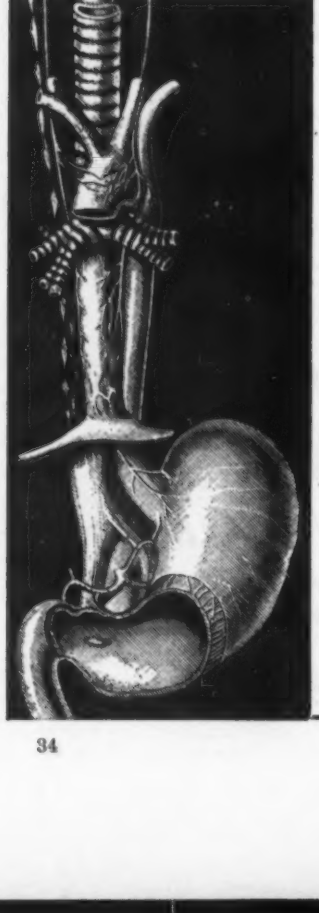

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THE LANCET
LONDON: SATURDAY, JAN. 22, 1955

Cervical Spine and Nervous System

THE neurological manifestations of changes in the cervical spine have received much attention in the past fifteen years; but there is still a good deal of confusion both about the nature of the bone disorder and about the mechanism of the resulting neurological defects. This confusion is reflected in the varied application of such terms as spondylosis, osteo-arthritis, disc protrusion, and degeneration of the spine. At first, workers were intent primarily on establishing the existence and character of the neurological syndromes due to abnormalities in the cervical spine. Following the lead given by Sir RUSSELL BRAIN in his careful and thoughtful articles,[1 2] many observers have added to the detailed descriptions of the neurological patterns arising from involvement of the cervical nerve-roots.[3–5] Furthermore, both BRAIN [1 2 4] and other workers, including SPILLANE and LLOYD,[6 7] have described the many different manifestations of changes in the spinal cord that may be found; and on p. 171 of this issue Dr. CLARKE draws attention to the frequency of this "cervical myelopathy."

The neurological effects of spondylosis are determined almost wholly by anatomical factors, and rational treatment must depend on correct appreciation of the anatomical derangements. The lack of unanimity on the management of cervical radiculopathy and myelopathy clearly reflects prevailing uncertainty about pathogenesis. The shadow of herniation of the lumbar intervertebral discs as a cause of sciatica casts itself over all thought relating to the cervical region, even though FRYKHOLM [5] pointed to some very important differences between the lumbar and cervical regions and remarked on the relative infrequency of soft nuclear herniations in the cervical region. Professor CAVE, Mr. GRIFFITHS, and Dr. WHITELEY, in an article that also appears this week, emphasise the importance of osteo-arthritis of the neurocentral joints of Luschka in the production of root symptoms. One very interesting feature of some of their cases was the absence of abnormalities of the disc space when osteo-arthritis of Luschka joints was displayed radiographically. This finding suggests that disc degeneration is not a sine-qua-non of cervical osteo-arthritis, although the two often co-exist. Not everyone will agree with the implication that radiculopathy is due rather to this osteo-arthritis than to lateral herniation of the disc; but the observations and excellent illustrations give additional point to the view that many different factors may bring about the neurological end-results of cervical spondylosis. From published reports cervical spondylosis emerges as a pathological miscellany in which the various subdivisions may be related both in nature and in development. The spinal abnormalities affect the cord and roots by pressure either on the nerve-tissues themselves or on their nutrient blood-vessels, as LIVERSEDGE et al.[8] suggested; and fibrosis of the root sleeve may play a part in the radicular symptoms.[9] This pressure ischæmia may be aggravated by continued movements of the spine.[10] It follows that therapy should be directed towards removing any or all of these factors, and will vary with the nature, duration, and extent of the skeletal lesion. Here dogmatism still has no place; but it does now seem possible to lay down certain guiding principles for the management of the various types of disorder.

It is quite clear that soft protrusions of the cervical discs may follow trauma and produce immediate symptoms ranging, according to their size and location, from acute brachial neuritis to complete paraplegia or quadriplegia. Such symptoms, if severe enough, require early operative relief for the removal of pressure. In a sense this type of lesions is outside the bounds of cervical spondylosis. But in some cases the initial symptoms subside with rest, aided perhaps by conservative remedies, while in others the protrusions cause virtually no symptoms; and in either event the stage is set for the later calcification of the protrusion, osteophyte formation, and the subsequent picture of the "single-disc" type of spondylosis noted in 18 of the 38 cases described by BRAIN et al.[2] If these effects of trauma involve two or more levels—as they may—the ultimate picture may resemble radiographically and neurologically the full-scale degenerative type of spondylosis. In this type of case removal of the source of pressure on the cord might seem the ideal remedy, but wrestling with an ivory-hard bar or knob in the vicinity of the highly vulnerable cervical cord can be most unrewarding for surgeon and patient alike. The presence of abnormalities at more than one level, particularly if demonstrated by myelography, seems to contra-indicate any direct approach to the skeletal lesion; but in all these cases there is something to be said for laminectomy,[2] even though the final results of such treatment are still unknown. Alternatively, the application for some weeks or months of a collar made of plaster, leather, or plastic will alleviate or abolish radicular symptoms; but this, like laminectomy, is of less value when myelopathy has developed and where the tissue changes may be irreversible. With the acute soft protrusions traction may be justifiable before operation or the application of a collar; but traction and manipulation have no place in the rational treatment of the more chronic lesions, where they may be positively harmful.

1. Brain, W. R. *Proc. R. Soc. Med.* 1948, **41**, 509.
2. Brain, W. R., Northfield, D., Wilkinson, M. *Brain*, 1952, **75**, 177.
3. *Lancet*, 1952, ii, 718.
4. Brain, W. R. *Ibid*, 1954, i, 687.
5. Frykholm, R. *Acta. chir. scand.* 1951, **101**, 345.
6. Spillane, J. D., Lloyd, G. H. T. *Lancet*, 1951, ii, 653.
7. Spillane, J. D., Lloyd, G. H. T. *Brain*, 1952, **75**, 177.
8. Liversedge, L. A., Hutchinson, E. C., Lyons, J. B. *Lancet*, 1953, ii, 652.
9. Frykholm, R. *Acta chir. scand.* 1951, suppl. 160.
10. Allen, K. L. *J. Neurol. Psychiat.* 1952, **15**, 20.

The factors other than disc protrusion that may influence the final picture of cervical spondylosis are becoming a little clearer. PALLIS et al.[11] investigated 50 hospital inpatients over the age of 50, and detected narrowing of the spinal canal in three-quarters of this total, and narrowing of the intervertebral foramina also in three-quarters; but such spondylotic change was not always associated with neurological abnormalities. In some cases these affections may have originated in a disc herniation of one sort or another; but shrinkage of disc spaces, not necessarily accompanied by actual herniation, and osteo-arthritic changes of the cervical spine seem to be included in the price to be paid for longevity. There is, it seems, an osteochondrous degenerative process ranging from generalised osteo-arthritis (with spondylosis from top to bottom of the spine) to the more localised affection of the neurocentral joints now described by Professor CAVE and previously mentioned by PALLIS et al.[11] The neurological consequences of this type of spinal disorder are similar to those of the chronic spondylosis related to disc protrusion, and sometimes both factors may operate in a single case. It follows that the management of this type of case will be similar to that of the spondylosis resulting from disc protrusion, with a more definite tendency towards conservatism. Professor CAVE suggests that neurocentral apophysectomy of the affected joints is the only means of permanent cure for the lesions he describes; but as he himself hints, the technical difficulties seem insuperable. If more than one abnormality is revealed radiographically, unroofing of the theca by laminectomy is similarly of doubtful value. It seems, then, that application of a collar is likely to be the only means of alleviating this condition; and here again radicular manifestations will be more amenable than those of myelopathy. Manipulation and traction and even "reablement exercises" may aggravate any or all of the neurological symptoms in these cases; and in this connection we may recall Sir CHARLES SYMONDS's[12] account of the rôle of trauma, or even ordinary movements, in precipitating neurological disabilities in the patient with cervical spondylosis. It has been suggested that the spine might be fused, either as a complete treatment or as an adjunct to laminectomy; but the benefits of such action have not yet been clearly established. Meanwhile it behoves us as we grow older to adopt a more regal posture and bearing, and to avoid all rapid, undignified movements of the head and neck, if we are to escape the manifold dangers of radiculopathy and myelopathy.

Our new awareness of the frequency of cervical spondylosis brings in its train an important clinical responsibility. Many neurological diseases may be simulated by cervical myelopathy and radiculopathy due to spondylosis, but there is always a danger that such another disorder may be present in a patient whose cervical spine is radiographically abnormal. If the intrinsic neurological disease were itself degenerative or untreatable, the confusion with spondylotic myelopathy would not be of great practical importance. But if the second lesion were, for instance, a benign tumour of the spinal cord or subacute combined degeneration of the cord, the attribution of symptoms to the coincidental spondylosis could be tragic.

11. Pallis, C., Jones, A. M., Spillane, J. D. *Brain*, 1954, **77**, 274.
12. Symonds, C. *Lancet*, 1953, **I**, 451.

Group Discussion

IF the aim of popular education is to create a well-informed, stable, and contented society, then one must admit that so far the results have been disappointing. Ignorance and prejudice, the two forces of evil which the educational reformers of last century so enthusiastically sought to overthrow, still estrange man from man and nation from nation. The reason, of course, is that the art of living with one's neighbour cannot be learnt from textbooks, and knowledge of chemical symbols or arithmetical equations helps little in a world in which the most potent influence is unpredictable human nature.

But let us not condemn education too precipitately. Its success, like that of the surgeon's knife, depends upon how it is applied; and if an operation is unsuccessful, the surgeon does not blame his knife. At its highest, education may unquestionably do much towards improving human relationships; but are we justified in accepting that its best method of application is the traditional one of "didactic" teaching? Many experienced teachers believe that in the traditional system the pupil's rôle is too passive to lead to any significant changes of attitude. The process of learning, they say, is carried out properly only if the pupil is actively coöperating; and the method they increasingly employ is one where pupils form small discussion groups, and where the teacher assumes to some degree the functions of a chairman. This system has been successfully put into practice not only with students in schools and universities, but also with groups of people anxious to learn how to deal with the perplexing situations of daily life. The principles and scope of the method are described in a symposium published lately by the Central Council for Health Education.[1]

As the introduction to this symposium points out, the use of discussion as a means of teaching dates at least from the time of SOCRATES. Of late, however, the scope of discussion has been greatly widened, and its value is now recognised in fields which are not primarily instructional. In youth clubs, community centres, and evening classes—in fact wherever small groups of people with some common interest are brought together—the method may be used to resolve everyday problems, and to reach a unanimously acceptable decision on future action. For example, parents may meet in their school hall and, with the headmaster acting as group-leader, consider the question of their children's home-work—how much should the children be required to do, and to what extent should they have help from their parents. Or a number of nursing mothers may, with guidance from the doctor of their infant-welfare centre, discuss the subject of "clock feeding," and by pooling their experience decide upon some definite future policy. As one writer puts it, "The process of reaching a decision by discussion greatly enhances the chances of its being put into practice. . . . This is partly due, no doubt, to a sense of loyalty to the group but also to a sense of individual security in doing something which is accepted by other people." For group discussion to be most effective the number of participants should be small, the atmosphere informal, and

1. Group Discussion in Educational, Social, and Working Life. Published by the Central Council for Health Education, Tavistock House, London, W.C.1. Pp. 92. 3s. 6d.

the group-leader someone who can guide the argument unobtrusively but firmly towards a definite decision. Where possible, the leader should have special knowledge of the topic under consideration: thus a local family doctor might preside at a discussion on The Care of the Elderly, or a local magistrate at a discussion on Juvenile Delinquency. It is important that he should be able to put the members of the group at their ease, and make each participant feel that his contribution is valuable and interesting. Sometimes, as one writer says, his function is merely "to merge the group and disappear"—since the discussion may proceed even more energetically in his absence. But usually it is helpful if the leader sums up at the end of the meeting, and formulates in simple terms the proposed course of action.

In the past twenty years the principle has been used with singular success in psychotherapy, and "group psychotherapy" is now a recognised way of treating some mental disorders. At first sight there seems to be little resemblance between a psychotherapy group and a group of persons meeting to consider a difficult social question. The latter attend on their own initiative, and have common interests and aims. The members of the psychotherapy group, on the other hand, are selected arbitrarily by the psychiatrist; often they meet as complete strangers; and they seldom have anything but their illness in common. Yet, fundamentally, the purpose of the two groups is the same: both overcome their difficulties by sharing them, and both gain strength from the realisation that their troubles are not unique. In the psychotherapy group the patient "re-discovers operationally the home-spun truth, that in helping others, he best helps himself." And that, after all, is a principle which applies to every section of society.

Recording Alimentary Movement

OUR knowledge of stomach and bowel movements in man is imprecise partly because no permanent visual record can be made; unfortunately man has not the transparency of the telescopic fish, *Carassius auratus*. Most investigations into the activities of the alimentary tract have been biochemical and chemical; and in consequence our minds are trained, and even chained, to the idea of chemical or hormonal causes of peptic ulceration—the very term "peptic" denotes this limitation. Yet the constant location of duodenal ulcer in the first part of the duodenum suggests that the mechanical force with which chyme is ejected from the pylorus may play a part; it would be instructive to see a ciné-film in slow motion of a barium meal.

The pioneer of X-ray cinematography was MACINTYRE,[1] who in 1897 demonstrated the movements of a frog's leg on 40 ft. of film. He used both the direct and indirect methods.

In the *direct method* a strip of X-ray film is later photographed on to ciné-film. By this method BARCLAY et al.[2] found that initial filming at the maximum rate of 8 frames per second [3] caused much vibration, owing to the weight of heavy moving parts; and they had difficulty in interrupting the electrical current at such short intervals, since contactors for X-ray apparatus are normally constructed for heavy currents and are therefore too cumbersome for rapid work. The method was used for investigating circulation in animals, and it should therefore suffice for the slower movements of the alimentary tract. With patients X-ray dosage is a real problem, though the dosage can be curtailed by means of intensifying screens, which utilise the fluorescent effect of X rays on such substances as cadmium tungstate; thus the proportion of film darkening due to X rays can be reduced to 2%, the rest being the result of light rays stimulated by the X rays on the screen.

Paradoxically the *indirect method* seems more direct. The photograph is not taken direct on to X-ray film; instead ordinary pictures are taken from a fluorescent screen. REYNOLDS [4] made this method practicable by his device for turning off the X rays when the film was being moved, and by using a ciné-lens of aperture f/085. But the X-ray milliamperage must be high to obtain sufficient fluorescence, and if injury from irradiation is to be avoided the exposures must be brief; REYNOLDS limited exposure of any one area to 16 seconds.

In man, therefore, these methods are cumbersome, expensive, and potentially dangerous. But now with image amplifiers much greater brightness is achieved with smaller doses of X rays, and so more protracted exposures are feasible. These amplifiers convert the energy in which the image is cast, from light on the fluorescent screen to electron emission from a photoelectric surface. These electrons do not radiate in all directions in the manner of light, so almost the whole emission can be amplified and drawn by a positive pole through electrostatic fields, which concentrate and focus them on to a small target screen where they are once more converted into light; this is photographed on ciné-film and passed through a telescopic system for simultaneous direct vision. Clearly the length of the amplifier tube is directly related to the size of the output screen; the bigger the screen, the longer is the vacuum tube, and the more difficult is the apparatus to construct. Accordingly screens have been limited to 5 inches square, which is just too small for study of the alimentary canal in the adult; but it cannot be long before these mechanical difficulties are solved. The gain will be great: for unit time of exposure the X-ray milliamperage required is reduced two hundred times; and according to COLTMAN [5] brightness can be amplified five-hundred fold—which brings the image out of the region of rod vision into that of cone vision, where stereoscopy is possible.

So much for direct visual recording of alimentary movements. Much has been done in the past by way of indirect analysis of peristaltic and pressure waves. The balloon and tambour system, recording on a kymograph, is attractive because of its simplicity; its limitations have been overlooked. A balloon is a shape unnatural to the alimentary tract; the physiological response which it engenders and then records is unlikely to be related closely to normal waves of contraction. From the physical aspect the system is most unsatisfactory; nobody would consider using a closed balloon-tambour system for anything but registering contraction waves, but even in a balloon/water-manometer system the pressures recorded are not directly intraluminal, since the size, shape, volume, and elasticity of the balloon influence the pressures passing through the system.[6] For recording contraction and pressure waves the intraluminal portion of the system must be small in bulk, to avoid recording

1. Macintyre, J. *Arch. Skiag.* 1897, **1**, 37.
2. Barclay, A. E., Franklin, K. J., Prichard, M. M. L. *Brit. J. Radiol.* 1940, **13**, 227.
3. van de Macle, M. *Fortschr. Röntgenstr.* 1937, **56**, 139.
4. Reynolds, R. J. *Proc. R. Soc. Med.* 1934, **27**, 985.
5. Coltman, J. W. *Radiology*, 1948, **51**, 359.
6. Brody, D. A., Werle, J. M., Meschan, I., Quigley, J. P. *Amer. J. Physiol.* 1940, **130**, 791.

an alimentary response due to the apparatus; ABBOTT et al.[7] devised a system of small metal capsules, each containing a flexible diaphragm carrying an electric contact which closed at known pressures. The method was ingenious but complex; but it does indicate that strain gauges could perhaps be useful. BRODY et al.[6] measured pressure changes with an open tube in the gut and an optical manometer; the mass introduced was small, and the inertia within the system very slight.

Motility has been investigated by the even less direct method of measuring electrical potentials. ALVAREZ [8] applied electrodes to the thin abdominal wall of a small old woman and compared the gastrogram with visible peristalsis. At that time he could use an intragastric electrode only in patients with achlorhydria, on account of the voltage variations set up, in others, by fluctuations in the level of acid in the gastric juice bathing the terminals. Using non-polarisable electrodes, one in the stomach and one on the skin, ADAIR and GOODMAN [9] found a difference of potential (the stomach being negative to skin) which increased after milk was ingested. Later in experimental work with QUIGLEY and BARCROFT,[10] these workers came to the conclusion that the gastric potential did not depend on the pH of the stomach contents or on activity due to secretion or motility; ALVAREZ and MAHONEY [11] had already observed changes in potential at times when no movement could be observed. Now MORTON [12] has developed an electrogastrograph on which he records direct current due to secretory activity with superimposed alternating current due to action-potentials arising from motility. He uses the same system of non-polarisable monopolar electrodes with the active pole in the stomach, placing the independent electrode on the skin over the right delto-pectoral groove near the shoulder; and he believes that the total of potentials built up at cellular and tissue interfaces, which form barriers to diffusion between the two terminals, must be nearly zero and can therefore be ignored. MORTON hopes that these methods may make clear the mechanism of motility. Both he and GOODMAN [13] before him have diagnosed early carcinoma of the stomach from the form of the tracing; and MORTON has also demonstrated variations from normal pattern in the presence of peptic ulcer, and has differentiated between gastric and duodenal ulcer. These empirical findings suggest that the electrogastrograph may prove useful in clinical practice; but the method is still at the experimental stage.

7. Abbott, W. O., Hartline, H. K., Hervey, J. P., Ingelfinger, F. J., Rawson, A. J., Zetzel, L. *Amer. J. med. Sci.* 1940, **199**, 879.
8. Alvarez, W. C. *J. Amer. med. Ass.* 1922, **78**, 1116.
9. Adair, G. S., Goodman, E. N. *J. Physiol.* 1936, **87**, 35P.
10. Quigley, J. P., Barcroft, J., Adair, G. S., Goodman, E. N. *Amer. J. Physiol.* 1937, **119**, 763.
11. Alvarez, W. C., Mahoney, L. J. *Ibid*, 1922, **58**, 476.
12. Morton, H. S. *Ann. R. Coll. Surg. Engl.* 1954, **15**, 351.
13. Goodman, E. N. *Surg. Gynec. Obstet.* 1942, **75**, 583.

Annotations

PALLIATION IN CANCER

DESPITE heartening progress in the treatment of malignant disease there are still many patients with cancer for whom there can be no cure. The management of each one of these has its own peculiar difficulties, but it is clear from a discussion, on Jan. 5, by the section of surgery of the Royal Society of Medicine that there is a wide choice of useful palliative techniques.

The limitations of surgery in this field were clearly stated by Mr. H. T. Simmons. One of the surgeon's most valuable contributions is in the relief of pain by removal of the primary neoplasm; but the circumstances in which this should be attempted depend largely on his judgment and experience. Incomplete excision of a tongue cancer can cause only harm, whereas in carcinoma of the stomach gastro-enterostomy alone is most unsatisfactory. In the small and large intestine the relief of obstruction by a by-pass is immensely valuable; but colostomy in an old man with an inoperable rectal cancer only adds another trouble and does nothing to relieve the distressing bleeding and tenesmus. Mr. H. R. Thompson has found, from the records of St. Mark's Hospital, that 17% of a large number of patients submitted to what was believed to be a palliative operation were still alive 5 years later. But often, said Mr. Simmons, a heroic operation is planned and executed only to show the surgeon's audacity and technical skill. Such an operation will be justified only if it brings considerable relief.

Hitherto full advantage has perhaps not been taken of the neurosurgeon's power to allay pain. There is a reassuring precision in spinothalamic tractotomy for painful lesions in the lower half of the body, and division of the glossopharyngeal nerve and of the posterior roots of the upper cervical nerves for intractable mouth tumours is less attractive only because it involves a somewhat complicated cerebellar exposure. But Prof. Norman Dott frankly admitted the shortcomings of leucotomy, which leaves the physical aspects of pain unaffected although the patient ceases to be distressed by its ravages. Respite is bought only at the cost of flattening and shallowing of the whole affective personality. No less important than the relief of pain is the preservation of essential neural function—for example, when vision is threatened by an intracranial metastasis or the spinal cord by an osseous deposit.

Hormonal therapy is clearly valuable in the palliation of cancer of the parasexual organs, but its effectiveness in any particular patient is largely unpredictable. The mounting experience of adrenalectomy has proved that the benefit may be dramatic, although we must continue to balance the severity of the operation against the palliation achieved. A preliminary report from Mr. Murray Falconer suggested that hypophysectomy is technically possible, and that in the hands of an expert we can expect an acceptably low mortality. This type of work, with its accompanying problems of endocrine replacement, should be confined to centres with special facilities. The suggestion by one speaker that the management of every patient with inoperable cancer should be considered by a panel of experts, each of whom knows the limitations of his own technique as a palliative, was regarded by the meeting with some misgivings—the care of the patient might pass to a "muddle of doctors."

Of drugs, morphine is our standby in the terminal stages: "it exists to be given and not merely to be withheld." Nurses are often reluctant to give it in adequate doses, even though the problem of addiction seldom arises. There is too much persistence of the Calvanistic line of thought, which prompted Professor Dott to quote the Scots saying that "ye canna buy the grace o' God ower dear." On the other hand, the patient will in no way benefit if a diagnosis of inoperable cancer is, by itself, made the justification for administering an opiate: its greatest merit is in the relief of pain and we must reserve it for this purpose. There can be no harm in the early and continuous use of analgesics, and several speakers made a good case for administering chlorpromazine, especially when vomiting is intractable.

The burden of care of the patient in his latter days falls mainly on his general practitioner, whose point of view was expressed by Dr. G. F. Abercrombie. He complained that hospitals too often fail to tell their patients anything, with the natural result that the general practitioner is put at a grave disadvantage from the very outset. But it was clear from the later discussion that not everyone would willingly follow his practice of always telling cancer patients the truth. He argued that we usually underestimate their ability "to take it"; he had been deeply impressed by their fortitude and by the mental adjustment that seemed to follow quite naturally. He saw nothing good in the dissimulation by doctor and relatives that must inevitably follow when the true diagnosis is withheld, and had never had good reason to regret telling the truth. In this regard we should campaign strenuously against the view, so commonly held by laymen, that a cancer death is always lingering and painful. Dr. P. W. Nathan took quite the opposite point of view. He felt that we have no moral duty to reveal the truth and that there is a good case for the cultivated deliberate lie. To judge by the views expressed by other speakers, the majority practice falls somewhere between the two extremes. In the early stages the patient's powers of self-deception are encouraged, and the truth is told only when the physician is satisfied that the patient wants it or when this seems to be in the interest of himself or of his relatives. By delay we may sometimes deny a responsible patient his only chance of putting his house in order. Dr. C. J. Gavey wisely put the case for frequent visiting in such cases, even when nothing overt is achieved; often, when there is a close bond of understanding between patient and doctor, there comes a time when the truth, although unspoken, is equally revealed by an exchanged glance or a squeeze of the hand. Mr. Simmons deplored the casual attitude of the surgeon who leaves the inoperable case to his registrar at the end of the list. At no time must the patient feel abandoned, and the nurses and the relatives no less need constant encouragement.

It seems clear from this discussion that the choice of method will depend partly on the site of the tumour and on its natural history, but even more on the patient's character, age, and responsibilities, and his position in society.

STERILISATION OF SYRINGES

EVERY housewife knows that the hottest part of a cooking-oven is near the top. Darmady and Brock,[1] in very thorough experiments with ovens for sterilising syringes, found a much higher temperature near the top of ordinary electric ovens, and this difference proved even greater with two gas-heated ovens. An alternative method—namely, boiling—was investigated by testing with thermocouples the temperature attained by individual syringes; and it was found that if the syringe was wrapped in lint before being placed in boiling water, 100°C was not reached for 5 minutes or longer. The other alternative—autoclaving—is unsatisfactory because the syringes have first to be taken apart.

Clearly if ovens are to be used for sterilising syringes, something must be done to equalise the temperature throughout the whole space; otherwise the syringes placed near the top of the oven may be overheated, while those at the bottom may not be sterilised. Darmady and Brock therefore tested electric ovens in which the circulation of hot air was aided by fans. In such ovens the temperature of the syringes, provided that they were not packed too tightly, rose rapidly and evenly to the desired level. What this level should be seems still to be in dispute; and the authors cite suggestions varying from 140°C for 1 hour (electric oven with fan) to 160°–180°C for 2 hours. A report [2] issued by the Ministry of Health specifies 160° ± 5°C for not less than 1 hour. Since spores of different organisms have different thermal death points, Darmady and Brock suggest that an authoritative body should define the organism to be used for checking sterilisation by dry heat.

From this valuable report certain principles emerge for those setting up a syringe service: only electric ovens with fans are suitable; the oven must not be overloaded with syringes, which must be packed loosely; and the temperature of the syringe should be checked against the temperature recorded by the oven's thermometer. Finally Darmady and Brock show that an electric oven with fan seems to work better if loaded while still hot—which is contrary to the M.R.C. memorandum [3] and to the Ministry's report.[2]

THE HOME-CARE TEAM

WE all know that far too many people knock on the door of the Englishman's castle and offer advice on health, infant welfare, surgical appliances, housing, drains, school attendance, delinquent behaviour, tuberculosis, mental ill health, and a variety of other topics; and that no two of these specialists will necessarily give the same advice, even when (as occasionally happens) they are talking about the same thing. It has always seemed desirable to reduce their numbers, and to have instead a few people with a broader outlook. Some think that if the health visitor and the district nurse could have more scope and appropriate training they could, with the family doctor, take in most aspects of family life; and that, being already trusted family friends, they are the right people to undertake this broad care.

The opportunities for health teaching open to the district nurse, working with the family doctor, have lately been described by Dr. J. L. Burn,[4] medical officer of health for Salford. Home care, he thinks, is bound to gain in importance: psychological, medical, and financial reasons all favour the complementary use of the home and the hospital in the care of the sick. Domiciliary visits by specialists—which he regards as one of the fine achievements of the National Health Service—have already enabled many people to stay out of hospital, and have also ensured that many who need hospital treatment are admitted without undue delay. This service, in his opinion, is being well and widely used: in one region only, in 1953, some 20,000 domiciliary visits were paid by consultants, and the numbers steadily increase. Earlier discharge of patients from hospital is now being arranged in some areas, though some hospitals—not confident of the standard of home care which now can (and should) be provided—hesitate to attempt it as a fixed policy. If only one patient in twenty was discharged earlier, to the care of his family doctor and his district nurse, it would greatly reduce the blockage of hospital beds and help the people on our hospital waiting-lists.

District nurses could be used more fully, Dr. Burn thinks, in the care of sick children: these sometimes get less skilled nursing than they need—the nurse, like the home help, being expected to give her attention almost exclusively to old people. Nor do pædiatricians get called in as freely as other specialists; and indeed the family doctor himself may not be called in till the last minute. Such delays mean that some children's lives are lost unnecessarily. Dr. Burn urges that the health visitor should pay more routine visits to babies in "black-spot" areas, and should press the parents to call in the doctor early when a baby is ill. She should also have far more official opportunity for collaborating with the district nurse, who in turn should be in closer touch with the doctor. All three—or their representatives—should have the opportunity of joining in discussions

1. Darmady, E. M., Brock, R. B. *J. clin. Path.* 1954, **7**, 290.
2. Report of the Central Pathology Committee of the Ministry of Health on the Sterilisation of Hospital Equipment. H.M.(54)118.
3. Medical Research Council War Memorandum no. 15. H.M. Stationery Office, 1945.
4. *Nursing Times*, 1954, **50**, 1425.

at the local health department when policy is being decided; and at Salford this is done.

The district nurse has "the unique and privileged opportunity" of being able to observe the whole needs of the families she attends; and she should be able, in his view, to call in, when necessary, the aid of the health visitor, the home help, the sanitary inspector, or any other useful person available under the N.H.S. Some are already doing this; but a few, he hints, cling a little too rigidly to their prescribed duties. He mentions the good spirit he found in the William Budd Health Centre at Bristol, where the health team—doctors, home nurse, midwife, and health visitor—worked keenly together in specially built premises. According to them, "the most important room in the building" was the staff room, where they met daily to discuss their patients and their patients' families.

The nurse's work, Dr. Burns thinks, could be lightened if we employed less highly skilled people for some of the routine tasks—to give blanket baths, for instance. We might also improve our supplementary services—arranging for "sitters-up," making the loan of equipment easier, and providing laundry services for incontinent patients. Another way of saving time would be for the public-health department to run a central syringe service, supplying doctors and nurses with all the sterilised syringes they need, and possibly with all other sterilised equipment. Again, a daily clinic might be sponsored by the public-health department, where the district nurse could give injections to all the ambulant patients on her list who needed them. He mentioned, too, the opportunities both nurse and doctor have for health education, "supporting each other and encouraging the patients and their families in the promotion of health and the prevention of disease."

EPITHELIOMA CUNICULATUM

THE recognition of a new pattern in disease is one of the satisfying features of experience in the practice of medicine. Such a piece of knowledge has been put on record by Aird and his colleagues.[1]

They found, in a man aged 64, a tumour of the sole of the foot comprising an irregular bulbous mass of a curiously "squashy" consistence; on pressure greasy, foul-smelling, "tooth-paste" material was expressed from the mouths of a series of sinuses, each opening on the top of one of the bulges. Although the tumour had penetrated through between the metatarsals to present on the dorsum there was no hint of destruction of bone or of tendons—an impression which was confirmed when a sagittal section showed it to be a well-defined tumour expanding into the soft parts. The histological picture was exceedingly confused. The tumour was made up of a complex pattern of anastomosing tracks, each lined by squamous epithelium and full of degenerating keratin. It was no surprise that a small biopsy fragment led to no clear understanding of the orientation of the various cell layers. A precisely similar clinical and histological picture was later found in a second case, again in the forefoot of an elderly man; and a third matching specimen was collected from the shelves of a pathological museum.

From a study of these three cases Aird et al. conclude that the lesion is a well-differentiated squamous carcinoma of low malignancy which is modified by pressure. Walking, it is presumed, forces the tumour up into the soft parts, in a manner reminiscent of corns and of plantar warts; and here keratin accumulates in cystic spaces which later empty through sinuses, to leave a distinctive soft and bulky tumour mass. Aird et al. believe that this form of squamous carcinoma is peculiar to the foot; and for it they suggest the descriptive term "epithelioma cuniculatum," from the resemblance of the tracks to the burrows of a warren. There was no clinical evidence of distant metastases, and treatment was in each case by amputation.

1. Aird, I., Johnson, H. D., Lennox, B., Stansfeld, A. G. *Brit. J. Surg.* 1954, **42**, 245.

PHYSIOTHERAPY EXAMINED

THE tremendous medical advances of the past fifteen years have included no outstanding innovations in the field of physiotherapy. In the late war a small and energetic group of remedial gymnasts was formed in the Services, and the introduction of its methods into civilian hospitals has marked a shift from passivity to activity by the patient in treatment. On the whole, however, physiotherapy has latterly tended to be one of the more conservative branches of medicine; and last year Tegner [1] boldly called for reconsideration of the merits of several forms of treatment whose worth has perhaps too often been taken for granted. This criticism has borne fruit, for on Dec. 8 the section of physical medicine of the Royal Society of Medicine met to discuss the Use and Abuse of Physiotherapy; and, in her opening remarks, Dr. Doris Baker, president of the section, said that this was the natural answer to Tegner's challenge.

Dr. A. C. Boyle pointed out that much of physiotherapy is directed at painful conditions of the locomotor system, some of which are apt to clear up of their own accord. Physical methods, which are commonly expensive, must not be prescribed as a mere placebo. Heat, rest, and activity might each be beneficial; and carefully planned physical treatment had a place in arthritis, certain pulmonary diseases, and neurological conditions—though even in these conditions much treatment that was at present being applied was useless. Squadron-Leader C. B. Wynn-Parry went so far as to reject altogether microwave diathermy, ultrasonics, and ionisation; and he thought that the claims made for faradism, constant-current treatments, short-wave diathermy, massage, and ultraviolet irradiation were excessive, and that these remedies were grossly over-prescribed. The emphasis of Dr. A. T. Richardson's remarks was on the particular contribution that the specialist in physical medicine can make to diagnosis and prognosis, through his knowledge of electrical changes. Dr. G. O. Storey found that ultraviolet irradiation had a limited value in dermatology: he regarded the prescription of physiotherapy in peripheral-vascular disease as quite unjustified. Dr. F. S. Cooksey welcomed the scientific investigation that was now going on, and strongly advised the physiotherapist to abandon out-of-date methods of treatment and follow the medical profession in its scientific scrutiny. Finally, Dr. W. R. Grant described physiotherapy as a drug of addiction.

It will be seen, therefore, that members of this specialist section are by no means backward in scrutinising some forms of treatment which, during the years, have been allowed to claim what was probably too large a share of the practice of physical medicine.

1. Tegner, W. S. *Proc. R. Soc. Med.* 1954, **47**, 23.

Dr. H. K. WALLER, well known for his clinical studies on breast-feeding, died on Jan 15.

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Special Articles

THE INCIDENCE OF CANCER OF THE LARYNX IN RELATION TO THE INCIDENCE OF CANCER OF THE BRONCHI

JAMES MAXWELL
M.D. Lond., F.R.C.P.

FEW will refuse to admit that there has been a great increase in the incidence of "cancer of the lung," or bronchial carcinoma, within the past thirty years, and the problem of this disease has acquired an added urgency because of the suggestion that this increase may be closely related to the rise in consumption of cigarettes during the same period. It is not always remembered, however, that this question of the action of inhaled irritant substances upon the mucous membrane of the respiratory tract has been mooted for a long time.

Amongst the first to suggest that the inhalation of irritant substances was a possible cause of bronchial cancer was Duguid [1] who in 1927 reported a high proportion of cases in outdoor workers. Two years later Maxwell and Nicholson [2] discussed the incidence of the condition and considered the possibility that, amongst other factors, tobacco-smoking could be an important cause. At that time it was not even certain that the disease was increasing in frequency, and they confined themselves to the suggestion that, if cigarettes were an important cause, it would be reasonable to expect a proportionate increase in females affected by this type of cancer, in view of the great increase in the number of women smokers at that time

In 1933 Maxwell and Hogg [3] reviewed the incidence of laryngeal cancer, as revealed by the Registrar-General's figures, over the twenty years 1911–30. It was obvious that the concentration of any inhaled carcinogenic substance would be higher when it struck the larynx than when it reached the individual bronchi, and they therefore sought to discover whether cancer of the larynx showed the same apparent increase as cancer of the lung. Reasons were given for accepting the accuracy of the figures used for a comparatively superficial form of malignant disease, and the figures for cancer of the œsophagus and of the tongue were included for comparison. The results showed a slight increase in the proportion of cases of cancer of the larynx to cancer in general, from 1·29% in 1911 to 1·92% in 1930. Cancer of the œsophagus was found to have maintained its proportion, whereas there had been a slight fall in the incidence of cancer of the tongue. No definite conclusions could be drawn from the figures quoted, but it was suggested that the figures for laryngeal cancer formed a useful basis for comparison; for it was then uncertain whether bronchial carcinoma was increasing in frequency or was merely being diagnosed more often.

It is now certain that bronchial cancer has increased, and is still increasing, in frequency, and the question of inhaled carcinogenic substances has become a matter of urgent importance both to the consumer and to the supplier of tobacco. I have accordingly extended the previous investigation by examining a comparable series of figures for cancer of the larynx in this country during the past ten years. The results are set out in the accompanying table, figures for carcinoma of the œsophagus and of the tongue being again included.

1. Duguid, J. B. *Lancet*, 1927, ii, 111.
2. Maxwell, J., Nicholson, W. A. *St. Bart's Hosp. Rep.* 1929, **62**, 204.
3. Maxwell, J., Hogg, J. C. *Lancet*, 1933, i, 1064.

It will be noted that cancer in general continues to increase steadily every year. (There is reason to expect such an increase and the factors concerned have often been discussed.) For cancer of the larynx, however, there has been no absolute increase in the annual returns for the past thirty years, and consequently the proportion of laryngeal cases to the cancer total has actually fallen, and indeed appears to be lower than it was before the 1914 war. Cancer of the œsophagus shows a similar decrease, and cancer of the tongue is becoming noticeably less common as the years go by.

The increase in bronchial cancer is now universally admitted. Yet the figures quoted here make it equally clear that cancer of the larynx is diminishing rather than increasing. If the inhalation of carcinogenic substances

TABLE SHOWING THE INCIDENCE OF MALIGNANT DISEASE OF THE LARYNX, TONGUE, AND ŒSOPHAGUS IN ENGLAND AND WALES, 1943–52

(The figures for 1911, 1921, and 1930 are included for comparison)

Year	Total deaths from malignant disease	Total deaths from cancer of			Percentage of all cases of malignant disease		
		Larynx	Œsophagus	Tongue	Larynx	Œsophagus	Tongue
1911	35,902	462	1454	978	1·29	4·05	2·72
1921	46,022	779	1907	1225	1·69	4·14	2·66
1930	57,883	1117	2260	1210	1·92	3·90	2·09
1943	73,564	1027	2277	900	1·39	3·09	1·22
1944	73,497	993	2196	912	1·32	2·97	1·23
1945	75,712	993	2268	802	1·31	2·99	1·06
1946	77,516	1010	2263	752	1·30	2·92	0·96
1947	79,784	972	2352	750	1·22	2·95	0·94
1948	81,655	1032	2311	718	1·25	2·83	0·88
1949	83,204	986	2225	655	1·19	2·67	0·79
1950	85,270	991	2345	671	1·16	2·75	0·78
1951	86,080	1007	2340	647	1·17	2·72	0·76
1952	87,642	941	2325	586	1·08	2·65	0·67

is really an important factor in the production of bronchial carcinoma what can be the reason for this diminution? The main contact with any inhaled irritant must be in the larynx, and the concentration of any such substance must be much less in the more distal parts of the bronchial tree. Therefore, if tobacco smoke, or indeed any other inhaled irritant, is concerned in causing malignant change in the bronchial epithelium, the relative freedom of the larynx from cancer can be explained only by assuming that its mucous membrane is much less sensitive to the inhaled agent than is the mucous membrane of the bronchi. Yet our knowledge of the action of most carcinogenic substances indicates that they act quite strongly on squamous epithelium, and it would have been reasonable to expect that during a period when cancer of the bronchi has increased so considerably there would have been at least a perceptible increase in cancer of the larynx. As there has been no such increase, we must, I think, conclude that, whether or not tobacco smoke is a factor in the production of bronchial carcinoma, some hidden and hitherto unsuspected factor is responsible for the astonishing increase in "cancer of the lung."

CONCLUSION

It is now certain that cancer of the larynx has not increased in frequency during the very period in which cancer of the bronchi and lungs has become very much more common. It is difficult to understand why this should be so if the inhalation of a carcinogenic substance is a vital factor in producing cancer in the respiratory tract.

Medical Education

THE FIRST FOUR YEARS

A Plea for a Different and More Vocational Curriculum for Medical Students *

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To produce beneficial results at student level, recommendations as to improvements in the methods of teaching must be very specific. Generalities are of little value.

The four years of which I am speaking here are the premedical year (which in Irish medical schools is still, almost invariably, taken in the medical school or university); the two subsequent years, devoted mainly to the study of anatomy, physiology, histology, and biochemistry; and the third medical year, in which the student devotes most of his time to acquiring some knowledge of pathology or basic clinical science in its various branches and to the study of materia medica, pharmacology, and therapeutics. During this year, and also for a short time at the end of his second medical year, the student attends hospital and receives elementary clinical instruction; but it is not my purpose to discuss this part of his education, except in the most incidental way. My object is rather to dissect the teaching which the student receives in preparation for his clinical years.

The period is one of great importance, because it is during this time that the general education of the student should be completed in order to give him the stamp of an educated man; while at the same time he has to be provided with the necessary technical knowledge in the basic sciences appertaining to medicine. Is it possible to give him the advantages of a broad general education, combined with a high standard of medical training, in the time permitted? I believe that it is, but to achieve this happy result many revolutionary changes require to be made in the methods of teaching.

THE NEWCOMER

In Britain, it is quite usual for the instruction required for the premedical examination, or its equivalent, to be given at school. But it has been a great mistake to separate the premedical year from the rest of the medical course. It is greatly to be regretted that the final years at school should be occupied exclusively in the study of chemistry, physics, and biology, with entrance to a medical school in view, when these years should in reality be spent in more general cultural instruction in languages, literature, mathematics, history, and geography; with chemistry, physics, and biology as possible alternatives to additional languages as subjects of cultural value in their own right.

While at school, the student does not learn how to learn. He receives instruction in classes from teachers who help him over the more difficult hurdles in the set course. He comes to the university untrained in any particular plan of learning. For the first time he is thrown upon his own resources and has to find his own level. There is no doubt that individuals vary enormously in the methods of acquiring knowledge which they find best suited to their particular mentality, training, and outlook. After a time, many students probably work out a system for themselves which they find gives reasonable satisfaction; there are many others, however, who never acquire a method of learning, but proceed as best they can and by dint of sheer hard labour, and very often unreasoning memorisation, learn enough to satisfy their examiners at the successive stages of the medical course. What is needed here is an advisory system for students to indicate to them, preferably individually or alternatively in small groups, how best they may go about learning the subjects they have to assimilate during the coming years. The method which each student finds best for his own requirements should be well established by the end of the premedical year and should stand to him thereafter for the rest of his medical course and, indeed, of his medical career.

At the beginning of the premedical course and of each subsequent course, the students should be told what they have to learn and why they are learning it. Otherwise many of them are completely at sea as to why they have to study a given subject, how they have to study so as to obtain the maximum return for their efforts, and where it fits into the pattern of medical studies which lead, ultimately, to medical practice. A medical tutorial system is thus envisaged, whereby students may be instructed at an early stage how to go about learning the subjects they will be required to master and the relevance of the subjects of the curriculum to the study of medicine.

The student cannot be expected to grasp, unaided, the relevance to the theory and practice of medicine of the subjects in his premedical course and in subsequent courses in anatomy, physiology, biochemistry, and pathology. He may well seem to be far from the bedside of the patient, where he conceives his proper place to be in emulation of the doctors he has known and the clinical teachers whom he admires. In many respects, it is a great pity that his first visits to hospital are now so long deferred. But if it were to be explained to him that outstanding success as a clinician and the inner satisfaction of knowledge well applied are, in reality, dependent upon the mastery of these earlier subjects—he would be more content with their study. What we, who are entrusted with these earlier phases of his medical education, have to consider is the best method of imparting instruction so as to help the student to acquire the necessary mastery.

Commencing with the premedical year, during which the student receives instruction in chemistry, physics, botany, and zoology, we can see an opportunity for courses which are highly relevant to his future as a medical student and as a doctor.

CHEMISTRY

It is difficult to understand why chemistry (and, to a slightly less extent, physics) has been taken out of the medical course proper. Historically, rational medicine is founded on chemistry and anatomy. With the emergence of chemistry from alchemy, advances first began to be made in our understanding of physiological processes. As chemistry advanced, so also advanced our knowledge of cellular life, of fermentation, of pharmacology and therapeutics, until today it is possible with the aid of the chemist to conquer infections, to relieve pain, and to prolong life, not merely in belief but in demonstrable fact.

The teaching of chemistry has passed out of the control of doctors, who formerly did much of it. Owing to the growth of the science and its increasing complexity, this change is perhaps inevitable. Moreover, many aspects of chemistry which are of great importance in modern medicine are to be found in the more difficult parts of the subject which, normally, only advanced honours students would be required to know. In these circumstances, it may appear difficult to provide the

* Extracts from a presidential address given to the Dublin University Biological Association on Oct. 30, 1954. The address appears in full in the January issue of the *Irish Journal of Medical Sciences*, and these extracts are published by courtesy of the Editor of that journal.

modern medical student with a course in chemistry at once relevant and adequate and, at the same time, sufficiently simple. My experience in examining medical students in chemistry, however, shows that they can acquire a highly competent theoretical knowledge of the subject in a course which is not too long. What is required, consequently, is a clearly defined course on which a standard textbook should be written.

The textbook would be like no existing textbook in chemistry and would be subject to frequent revision. It would give in simple terms the more important points in chemical theory, followed by a special treatment of inorganic chemistry based upon the periodic table. Thence it would proceed to organic chemistry, dealing in turn with the straight-chain and ring compounds and their derivatives, from the point of view of structure, presenting the student with a consecutive and logical exposition of the subject. In both inorganic and organic chemistry, selection of material for special mention would be made in relation to its importance in medicine. To some extent this has been done in the past, but there is a long time-lag between the recognition of the importance of some aspects of chemistry in medicine and their inclusion in the premedical chemistry course. A similar time-lag tends to retain in the course, as important to the student, many subjects which have long ceased to matter. To cite instances from inorganic chemistry, arsenic, and lead, formerly much stressed, are now of little consequence. On the other hand, it is not many years since beryllium and tantalum were mentioned in small print in quite large works on inorganic chemistry, but today each is of importance in medicine; the first, because of its violently irritative effects on the tissues; the second, because it is so inert. The textbook would be further embellished by a section on elementary physical chemistry in relation to medicine, and would contain chapters written in semi-popular style dealing with a variety of selected topics illustrating the importance of chemistry in medicine.

With such a textbook, the need for more than a few formal lectures would disappear and their place could be taken with advantage by tutorials and lecture demonstrations to small groups. Medical students should learn formulæ, but they should be required to learn only a few equations, those necessary for practical titrations. The course of reactions could quite well be indicated by formulæ showing the nature of the chemical change in reaction. It is unnecessary to produce a balanced equation for the understanding of most reactions and, in some instances, it is merely foolish since the equation does not in fact represent the true course of the reaction at all.

The student's studies in theoretical chemistry would be supplemented by a practical course in which the emphasis would be upon those chemical procedures which he is likely to find of greatest use in his subsequent studies in medicine and in medical practice. Thus, he would do only a little qualitative analysis, and that carefully selected, but he would do many titrations so as to become thoroughly adept in the use of pipettes and other instruments of chemical measurement. In designing practicals, whether they be in chemistry or in other subjects, one must bear in mind their four fold purpose. They serve to train observation, to train manual dexterity, to aid the understanding of the theory of the subject, and to instruct in the planning of experiments. From the student's point of view, the first three are the most important.

PHYSICS

Turning to physics, the pattern observed for chemistry may be repeated. There are many aspects of physics, which in general is a difficult subject, on which special attention could be focused from the medical point of view. In any event, one finds in teaching and examining students that those parts of physics which are relevant to their medical course and to medical experience are often forgotten.

It is surprising how many students in their third medical year still do not understand the microscope and the way to use it to best advantage. To cite another example, when examining in hygiene one finds that few students understand the arrangements of the ordinary domestic hot-water supply. Involving as it does a knowledge of the elementary principles of hydrostatics, of conduction and convection of heat, the hot-water supply of a house provides a simple practical example of the application of physical theory which is important to health. It is, in any event, something which the doctor should know—if only as a family man, which most medical students are destined to become. One may contrast the lack of knowledge of these simple, but important, questions with the advice once given to me by a predecessor of mine as examiner in physics to the effect that if information was slow in coming in the viva-voce, the question to ask was the laws of the transverse vibrations of strings. This never failed to elicit a correct reply, and the examiner and candidate parted on good terms. The question was clearly a grinder's tip based on an imperfect notion of the importance of these laws to the functioning of the vocal cords.

So in physics, as in chemistry, what we require is a clearly defined course around which a textbook, suited particularly to the needs of the medical student, should be written. The matter could be presented in such a way that it did not lay too much emphasis upon the mathematical approach to the subject, which is that of the true physicist but is beyond the powers of the average medical student. The elementary theory of physics and its practical applications in medicine could thus be made available in a relevant fashion, supplemented by lectures and lecture demonstrations. As for practicals, while some devoted to experiments proving the truths of physics may be desirable, however inadequately they maybe conducted by medical students, it seems to me that much of the time devoted to practicals could be spent in becoming familiar with the working of instruments, based on applications of physical theory, which are used in medicine and surgery. To take a few examples: when learning the theory of the screw, should practical work not be directed to learning at the same time the uses of different types of screw, how to thread a screw, and so forth? And in optics, once the properties of different kinds of mirrors, lenses, and prisms had been explained, the student might study the microscope—taking a simple microscope to pieces and reassembling it. Would it be absurd to suggest that he should start to use the ophthalmoscope, the laryngoscope, and similar instruments, if not on the living subject, at least on models?

BIOLOGY

Botany and zoology are subjects which linger in attachment to the medical course. Each has its relevance, but nowadays it is mainly to a later phase in the student's career than the premedical. What is particularly needed at the early stage is a course in biology to explain to the student the nature of life, starting with the smaller simple cells, their elementary metabolism, and mode of reproduction, and from that proceeding to the more complex multicellular forms of life, especially in the animal kingdom. This course should include an account of the differentiation of tissues and organs as one ascends the scale of life, and of their functions. An elementary introduction to the study of heredity and genetics should be included. It is, at a much later stage, when the student is doing pathology that a short course in medical protozoology, helminthology, and possibly entomology,

should be provided, together with some account of the pathogenic fungi.

ESSENTIALS—AND EXTRAS

In the suggested approach to the preliminary medical subjects there is no intention of decrying the invaluable services to medicine which so many teachers in these subjects have rendered in the past and will continue in the future. It would not be possible for them, in existing circumstances, to design courses along the suggested lines, since medical students have to be fitted into the general pattern of science instruction in the universities. The proposed ad-hoc courses in chemistry, physics, and biology would require special staff and facilities. My object is rather to suggest the adoption of the general principle that instruction of medical students in the subjects of the medical curriculum, during the first four years, should be regarded as technical instruction and that the content of the various courses should be adjusted accordingly. As far as possible, this adjustment would lead to the adoption of set courses, in theory and practical work, considered adequate for the requirements of the average medical student, and on these courses the professional examinations would be conducted. The operation of this plan would substantially shorten the time spent on professional studies and would enable the university to devote more time to the student's general education.

The study of subjects of cultural value would occupy part of that time. The subjects chosen would necessarily depend upon inclination and ability. For some, perhaps, mathematics, for others classical or modern languages would be an attraction. It is particularly desirable nowadays that doctors should learn languages. First, there is the cultural value. Whether the additional language studied be Irish, French, German, or one of the other European languages, the training is a cultural asset. In addition, a language is an instrument of contact with our fellow men in other lands. It is less easy for us, than for those who live on the Continent, to acquire a speaking knowledge of a language other than that which we normally use, but it becomes more worthwhile every day. At medical conferences abroad, Irish and English delegates are noticeably far behind those of other countries in this respect.

Again, the subjects of the medical curriculum in their wider scope are of cultural value. With the teaching of these subjects for professional purposes restricted to essentials, there would still be wide fields for the more brilliant and enterprising students to explore. Facilities should therefore be available for the pursuit of higher knowledge in any of these subjects by students who possess the necessary ability and inclination. As a stimulus, particularly to such students, it is to be assumed that a programme of research will be in operation in all teaching departments.

ANATOMY, PHYSIOLOGY, AND BIOCHEMISTRY

If we have delayed too long on the premedical course, it is because the subjects of this first year are well suited to illustrate the pattern of medical instruction as technical instruction. During most of the next two years the student has to learn human anatomy, physiology, biochemistry, and histology. One may claim at the outset that a sound relevant knowledge of physics and chemistry, gained during the courses suggested for the premedical year, would be a very great help in the study of physiology and biochemistry. The courses would have been designed to prepare the student for the application of the laws, theory, and experimental methods of physics and chemistry to the living animal.

Anatomy, however, is in a different category. There is no substitute in clinical medicine and surgery for an accurate knowledge of anatomy. And such knowledge, on which finesse in clinical diagnosis and sound judgment in treatment so often depend, can only be obtained by the most diligent application. Nowadays a real difficulty has arisen in the teaching of anatomy in many medical centres, owing to the shortage of subjects for dissection. Without freely available facilities for dissection, it is not to be expected that the student can achieve the standard of knowledge needed to enable him to place his finger at will over the site of any structure in the body of the adult or child and to indicate the approach to it. Yet this is the standard of anatomical knowledge which medical and surgical practice demands. One is tempted to suggest that the members of our profession should once more, as in the days before the passing of the Anatomy Act, sign a pledge donating their remains after death to the anatomists to be used for the proper instruction of students.

Formal lectures to large classes in descriptive and systematic anatomy are of little value as compared with lecture demonstrations to small groups. When starting anatomy, however, one felt the need for a few introductory lectures to indicate the general design of the body and the nature and properties of its main systems. Thus, it would have been a help to know that the skeleton constitutes the framework to which the muscles are applied, what muscles are and what they do, and the general arrangements of the heart and blood-vessels and of the nervous system. Looking back on the early days of dissection, when one began what might be termed amateur exploratory anatomy in the region of the axilla, it would have made things easier to have known, before starting, the sort of things one had to look for, where they came from and where they went.

But no amount of knowledge of the position of structures in the body is adequate without a knowledge of their function; and the modern approach to the teaching of physiology and biochemistry to medical students, directed primarily towards an understanding of the functions and requirements of the human, as distinct from the animal, body has been a great advance in medical education. It is bearing fruit, more and more, in the application of these sciences and their methods to clinical medicine. One might be permitted the opinion likewise that in the study of histology greater emphasis on the microscopic structure of human tissues and organs would be an advantage. A closer coöperation between the pathologist and histologist might help to bring this about; pathologists have access to relatively normal human tissues and organs, as well as to those which are altered by disease. The specimens at their disposal would not, it is true, satisfy the more exacting requirements of the normal histologist as to fixation and details of cellular structure, but they are often sufficient for the instruction of students in normal histology.

CORRELATION AND INTEGRATION

The student requires to be told at intervals how the subjects which he learns in some parts of the course correlate with those of other parts. In suggesting that many formal lectures should disappear, their place being taken by lecture demonstrations and tutorials, I would also suggest that room should be made for lectures of correlation, for which there is a decided need. In these lectures the student would have outlined to him the things he has learnt and is learning, and how they fit into the programme and link up with other parts of the course.

At the end of the second medical year and during the third medical year, he attends hospital and begins to learn pathology or basic clinical science. At the same time he studies materia medica and therapeutics. Unfortunately, however, integration is lacking between different parts

of the pathology course on the one hand, and between instruction in pathology and clinical instruction on the other. The lack of integration between pathology and the medical aspects of bacteriology and immunology is regrettable, but the lack of integration with clinical medicine and surgery is even more serious. The difficulty arises in part because the medical student nowadays starts hospital attendance so late in the medical course. It is rather meaningless for the student when he hears the details of pathological changes found in cases which he has never seen. The demonstration of lesions in specimens only partly fills the void, and many students find great difficulty in understanding clinical disease, which they have not seen, in terms of lesions demonstrated to them in specimens.

Few medical sciences have changed more in character than pathology during the past twenty or thirty years. Not only has there been a great increase in knowledge so that much which was formerly vague theory is now established on a basis of solid fact, but during this period many pathological lesions formerly common have now virtually or totally disappeared. Two things about pathology are outstanding. One, that it is a great subject of correlation. Dealing as it does with the causes of disease, as well as all aspects of the changes which are wrought in the structure and functions of the body by disease, it occupies a central position linking the earlier subjects of the medical course to itself and to clinical medicine and surgery. The other is that today it occupies the position of arbiter of diagnosis. Modern diagnosis must be made in terms of the underlying pathological change: diagnosis by signs and symptoms alone is not sufficient. Pathology is necessarily a subject of enormously wide scope and is inseparable from clinical medicine, but especially during the third medical year it lends itself to being taught as a technical subject in relation to clinical medicine and surgery. Its teaching can be so conducted that within the framework of general pathology a highly relevant body of knowledge may be acquired by the student.

Before the end of this year, the general education of the student should be completed so that he is now as well instructed in his chosen field of arts or science as are the other students of the university. For the remainder of his medical course his instruction is mainly a matter for his clinical teachers; but in the plan which I have outlined he will have been specially prepared by a highly relevant technical training and a good general education to assimilate the knowledge and skill which they are ready to impart.

OBJECTS OF EDUCATION

The suggestion is often made that one of the chief objects in the medical student's education should be to train him to think for himself. I would venture to suggest an amendment—that the aim must rather be to teach him to think correctly. For right thinking there are two essentials, knowledge and a trained mind. Both are the outcome of sound education which not only provides knowledge and teaches the way to add to knowledge already acquired, but also trains the mind to weigh and apply knowledge to the best advantage. Education which is too highly specialised is incomplete and imperfect. It is often dangerous. The doctor whose knowledge is restricted to the science of his profession is an imperfect doctor, no matter how well informed he may appear to be in medical matters. In order to be fully worthy of participation in the activities of his profession, the doctor must be, not merely a scientist, but also a man of humanity and of wide and varied understanding. To these attributes he will, in time, add experience and wisdom and thus come nearer to perfection in his profession.

In England Now

A Running Commentary by Peripatetic Correspondents

WE realise we are under the dew-claws of our cats, but at times I think they go too far. When we lived on the second floor they arranged to come in and out by way of a tree, which meant we had to keep the sitting-room window open to the elements night and day. It was a hardy life, but we won through. When we moved to the third floor they looked out disapprovingly, and intimated that there was no tree. At enormous expense we had a cat-ladder built by a distinguished firm of ladder-makers. It was one plank wide, with balconies at intervals, and could have presented no difficulty whatever to any able-bodied cat. Snug, when deposited in one of the balconies, looked pleased and expectant; Flute, on the other hand, gave his well-know impression of Macbeth at the sight of Banquo's ghost. Then they both required us to take them in again. The ladder-builders were beyond praise: they made it two planks wide, with a handrail, and enlarged the balconies. Snug immediately toddled sedately down, and Flute, after a bad attack of the vapours, rushed down and up again; but of course as soon as that system was working smoothly we moved again, this time to a house in the country.

The kitchen window presented no difficulties to the cats, but having it constantly open covered us with chilblains and meant we never got a hot meal; so we called in George to make us a cat-door. It was a new idea to George, but he took to it with enthusiasm. We came home at nightfall to find he had bored a porthole in the backdoor about 5 in. in diameter and 8 in. from the ground—nicely placed for a burglar, who had only to slip his hand in and draw back the bolt. Mrs. S, who does for us, was very pleased with it. "I spent the whole afternoon," she said, "training me cats, and at the end they was coming in and out lovely." Whatever they did for Mrs. S, they were determined to make us suffer. They looked from us to the porthole, put two paws and a nose through and stared into the night, and when gently chivvied from the rear lumbered through in an uncouth bone-rapping manner that put our hearts through the wringer. We telephoned to George, who, awed by our remorse, promised to come next day and enlarge it. "And while you're about it," we said, "hang a bit of wood across the hole so that they can push it open from either side; that'll keep out the draught."

Home we came at eventide, to find he had been as good as his word. He had hung a stout billet of timber in the opening which, so the cats intimated, was quite beyond their strength to move. He had also transferred the bolt to a position, out of reach of burglars, where it interfered with the latch of the door. Working fast we anchored the billet of timber out of the way by means of two screw eyes and a bit of string, thus leaving the cat-door in the permanently open position. A strong blast straight off Greenland whistled through the hole and filled the house. The cats repeated their act of peering timidly out and finally making the supreme sacrifice of struggling through, bumping their rumps on the billet as they went, and leaving lumps of fur on the woodwork. We went despondently to bed. An hour later we awakened to a noise of galloping. Investigation revealed two cats charging up and down the hall and taking the cat-door like race-horses, tails streaming, heels tucked up behind. Beaming indulgently we tiptoed back to bed.

* * *

I have always found ambivalent a difficult word to slip easily into a conversation, but I think it could be applied to the feelings of Edinburgh graduates who read in the *Times* of Jan 15 that the senate of their university had refused to allow the students to use the McEwan Hall for the installation of their new rector. Most of us are sorry to hear that another tradition has lapsed, but the installation of the rector is one of the more robust academic occasions, and anyone who recalls the indignant squawks of a clutch of outraged hens let loose in a flurry of toilet-rolls from the upper galleries of the McEwan Hall will not be able to withhold a certain measure of sympathy from the senate, especially as £15,000 has lately been spent on the redecoration of the hall. But on second

thoughts I should perhaps reserve ambivalent to describe the feelings of Sir Sydney Smith, the new rector, who as chairman of the senate meeting must surely have announced this inhospitable decision with regret—and relief.

* * *

DISTINGUISHED FOREIGN COLLEAGUE: May I bother you about a small point which has puzzled me lately? As you know, I follow English medical publications closely, yet I do not seem to have heard of any of the authors of a series of authoritative papers which is appearing in *The Lancet*. Sir Daniel Whiddon, for instance, where is he a professor of surgery? And Dr. Harry Hawke—which great laboratory does he direct?

ME (heartily): I don't wonder you were puzzled. But the explanation is quite simple. These people are not writing under their own names. They have chosen pseudonyms.

D.F.C.: What a pious custom. No doubt in this way they commemorate revered physicians from your glorious past. Sir Daniel Whiddon and Dr. Harry Hawke belong, with Harvey, Osler and Lister, to the history of British Medicine.

ME: Well, you might think so; but actually, though it may seem rather odd, they aren't doctors at all. You see, they all used to live near Widdicombe.

D.F.C.: Ah, then they all perhaps held chairs at the University of Widdicombe—no doubt a famous medieval seat of learning.

ME: Well, not exactly. In a way they did all have seats at Widdicombe, but it wasn't so much chairs as seats on a horse. They all took part in a famous ride.

D.F.C.: Ah, I understand. They were the heroes of some dashing heroic exploit. Perhaps they brought the good news from Widdicombe to Bristol. I can see that gallant cavalcade of horsemen . . .

ME: Well, actually it wasn't quite like that either. You see, though there were eight men, they all rode on the same horse.

D.F.C.: Eight men on one horse! But I thought the English were always kind to animals. Who owned the horse?

ME: They borrowed the horse—a grey mare, rather a large one, I fancy. It's all described in an old song. The first verse goes something like this:

Herr Tom Pearce, Herr Tom Pearce
Leih mir Deine graue Stute,
Dann reit' ich entlang am Ufer des Lea
Und besuche den Jahrmarkt in Widdicombe
Mit Herrn Brewer, Herrn Stewer, Herrn Gurney,
Herrr Davey, und Onkel Thomas, et al.

There, that explains the whole set-up.

D.F.C.: Y—e—s. Perhaps there are other verses?

ME: Well there are, but I don't think you'd find them very helpful.

D.F.C.: At least tell me what they did at Widdicombe.

ME: Oh, but I don't think they ever got there.

D.F.C.: But what hindered them?

ME (uneasily): Well for one thing, the Mare stopped to make her will.

D.F.C.: To make her will!

ME: That's right, old chap. You know I was afraid you would find this part rather confusing.

D.F.C.: I suppose the Mare will be writing to *The Lancet* herself next.

ME: Well you know, I shouldn't be at all surprised if she did.

D.F.C.: Perhaps a contribution on veterinary medicine.

ME: Well, actually, I think she's more likely to write and tell the others where they get off.

D.F.C. (infected at last): With all eight on her back at once, she has every justification!

* * *

"SURGICAL POLYPHARMACY" [1]

Disease and cure
Are oft obscure.
Physicians in such
Cases prescribe too much,
And that heresy
Is called "polypharmacy."

Surgeons remove
When in doubt,
Sundry bits and prove
Man can do without.
The knife, thus erratic,
Is "polypragmatic"!

1. See *Lancet*, Jan. 8, 1955, p. 85.

Letters to the Editor

ARGENTAFFINOMA AS ENDOCRINE TUMOUR

SIR,—You have twice [1] drawn attention to the probable endocrine function of argentaffinoma, in that metastatic carcinoid is associated with a syndrome principally manifested by flushing, right heart disease, respiratory distress, and diarrhœa. These manifestations seem attributable to release of serotonin (5-hydroxytryptamine) into the blood from the tumour. This concept has been supported by the preliminary demonstration of hyperserotoninæmia in 2 patients exhibiting this syndrome.[2] You have also suggested that urinary 5-hydroxyindole acetic acid (5H.I.A.A.)—the product of oxidative deamination of serotonin—might be increased in patients with malignant carcinoid and that a method for its assay might serve as a diagnostic test.

We wish to report results of preliminary studies on 3 cases of malignant carcinoid in which we used a recently developed method for assay of 5H.I.A.A. in urine.[3] In all 3 patients the daily excretion of 5H.I.A.A. was tremendously increased over normal controls.

Infusion of serotonin in control patients.—One patient received 31 mg. of serotonin base over 60 minutes and the other 10·4 mg. over 30 minutes. Both had local pain in the vein, and abdominal and bladder cramp when the infusions began or when the rates were increased. They also had hyperpnœa, and tingling and burning of the face and neck during infusion. There were moderate (11 and 18 mm. Hg) increases of mean arterial pressure. Objectively, neither was flushed. A wide experience with other patients given serotonin by instantaneous intravenous injection has shown that amounts of the order of 1 mg. base are as much as most will tolerate because of the discomfort. Urines were collected during and after infusion, and increments in 5H.I.A.A. output were calculated by comparison with outputs measured at other times. The increment in the first patient was 12 mg. over 3 hours and in the second 2·6 mg. over 2 hours; the outputs in other specimens were about 5 mg. per 24 hours. Thus, the patients excreted as 5H.I.A.A. respectively 39% and 25% of the serotonin infused.

Malignant carcinoid.—Observations were made in 3 patients. One, a patient of Dr. George Crile, jun., of Cleveland Clinic, was an elderly man with widespread abdominal and hepatic metastatic carcinoid, who did not exhibit the "carcinoid syndrome." Outputs of 5H.I.A.A. in his urine on two occasions were 65 and 230 μg. per mg. creatinine, or roughly as many mg. daily. A biopsy of the tumour tissue was used for a rough bio-assay in an anæsthetised dog, which indicated a serotonin content of 0·9 mg. per g. of fresh tissue. The second, a woman who was flushing and had other characteristics of the syndrome, is under study by Colonel T. W. Mattingly, of the Walter Reed Hospital, Army Medical Center; her urinary 5H.I.A.A. was found to average about 350 mg. per 24 hours. Blood concentrations of 5H.I.A.A. were measured and found markedly increased over normal. The third case of malignant carcinoid, a patient of Dr. John J. Sampson, of San Francisco, yielded 142 mg. of 5H.I.A.A. per 24 hours. Clinical details of this patient are not available at this time.

These observations substantiate the suggestion that increased urinary 5H.I.A.A. is of diagnostic value in malignant carcinoid. The levels found in these three patients vastly exceed the 5–10 mg. per 24 hours found in normal subjects,[4] or in a wide variety of diseases.

The infusion data indicate that less than one-half of circulating serotonin is excreted as 5H.I.A.A., from which it seems that serotonin release in malignant carcinoid may range from 200 to 1000 mg. per day or 0·1 to 0·7 mg. per minute.

Attribution of the clinical syndrome to release of serotonin alone is still questionable, since infusions of the

1. *Lancet*, 1954, ii, 372; *Ibid*, p. 958.
2. Pernow, B., Waldenström, J. *Ibid*, p. 951.
3. Udenfriend, S., Weissbach, H., Titus, E. O. To be published.
4. Titus, E. O., Udenfriend, S. *Fed. Proc.* 1954, **13**, 411.

base at rates of about 0·5 mg. per minute did not reproduce flushing or other aspects of the syndrome. Further, episodic flushing was not detected in one patient (that of Dr. Crile) during several days' observation, in the course of which great urinary outputs of 5H.I.A.A. were observed. The estimates of serum serotonin by Pernow and Waldenström [2] indicate the instantaneous presence in blood of some 30 mg. of circulating serotonin. This estimate seems excessive. It is much more than control human subjects tolerate by instantaneous injection. Possibly, by analogy with phæochromocytoma, the inconsistencies can be resolved by demonstration of tolerance of the patients to very large amounts of the amine, and by supposing episodic release thereof. It can be assumed that current studies, to which the material of this communication is preliminary, will unravel this mechanism. At least, the data show that measurement of urinary 5H.I.A.A. is of diagnostic value in malignant carcinoid, even when, as in one of these three patients, the clinical syndrome is not apparent.

Research Division, Cleveland Clinic Foundation and Frank E. Bunts Ed. Institute, Cleveland, Ohio.

IRVINE H. PAGE
A. C. CORCORAN.
SIDNEY UDENFRIEND

Laboratory of Chemical Pharmacology, National Institute of Health.

ALBERT SZOEDSMA
HERBERT WEISSBACH.

PULMONARY EMBOLISM

SIR,—May I support Dr. Aidin (Jan. 8) in his plea for a different approach to the problem of thrombo-embolism? Some time ago,[3] I put forward a hypothesis which was not inconsistent with the work to which Dr. Aidin refers, and it is gratifying to find that doubt is again being cast on the guilt of "venous stasis."

In arteries, the blood moves quickly; in veins it moves less quickly; and in capillaries and sinusoids it moves very slowly indeed. At the periphery of all vessels it is virtually stationary, and there is reason to believe that the blood in contact with the lining of the aorta is as still as the water at the banks of the Thames. It so happens that intravascular clotting is most common in the arteries, and least common in the capillaries and sinusoids, but it does not follow that thrombosis is the result of "arterial hurry."

If research can be diverted into more profitable channels, two advantages may accrue:

(1) The real cause of thrombo-embolism may be found, and rational treatment become possible.

(2) Surgeons may refrain from chivvying their elderly patients out of bed for a few minutes on the day after a major operation. I have often wondered what this astonishing antic is supposed to achieve: the only tangible results I can remember are two apoplectic seizures and one acute heart-failure.

I believe that thrombo-embolism may be related to flooding of the veins by products of the tissue katabolism which follows confinement to bed, wasting disease, and operative or other trauma. This katabolic process reaches a maximum about ten days after an "injury," but there is little evidence to suggest that the process can be modified by short-term alterations in the diet—indeed, there is some evidence to the contrary.

South Mimms, Herts. V. J. DOWNIE.

HOARSENESS AND CORONARY THROMBOSIS

SIR,—The hoarseness noted by Dr. Sarkany and Dr. Birdwood [4] as a sign of coronary thrombosis has been familiar to me for several years. I do not think that it is a sign of coronary occlusion only; I have observed it in patients with no certain evidence of infarction whom I followed up for several years—though of course even in these cases coronary thrombosis cannot be ruled out. Laryngological examination never revealed any organic lesion. I attribute the hoarseness to the exhaustion caused by severe and distressing pain.

Hufeland Hospital, Berlin. R. SCHEUER-KARPIN.

THE BURNT CHILD

SIR,—It is a pity that Dr. Shannon, in his excellent account last week of some of the aspects of the management of burnt children, should sow jangling discord with his disparaging comment on physicians. It is a pity that, after looking at a burnt child, he did not look further afield. He might then have become aware of something of the contributions of physicians to the care of burnt children, and learnt that there are physicians who have the training, experience, and outlook to help in these problems. When the medical profession is being split into so many different specialties anyone who, by his written or spoken word, creates factions and feuds is doing a disservice to medicine.

Dr. Shannon is, of course, right when he says that "The custom of referring seriously ill patients to physicians for preoperative assessment is to be deplored." There should be no question of reference; the physician should be concerned with the child from the very first. Burnt children, as other children, are the better cared for when one or more of the team are familiar with the peculiar problems of childhood and are interested in their families and homes as well as their illness, and Dr. Shannon can be assured that the team that includes integrally a pædiatrician is more complete than that without.

Newcastle upon Tyne GEORGE DAVISON.

ADRENALECTOMY FOR HYPERTENSION

SIR,—Your excellent leading article of Jan. 8 stimulates me to draw attention once more to the value of total bilateral adrenalectomy in cases of malignant hypertension.

I am aware that your editorial was not primarily concerned with cases which had progressed to the malignant phase, but it is in these patients that the procedure can show such dramatic results. As you have stated, partial adrenalectomy, and very occasionally total bilateral adrenalectomy, have so often been combined with sympathectomy or hypotensive-drug-therapy that it is difficult to assess the indications for adrenal surgery alone as opposed to other procedures. You also point out that the blood-pressure per se may not be influenced by adrenalectomy, and for this reason I have hesitated to operate on any case with straightforward "essential hypertension." But most clinicians would agree that once papilloedema has developed the expectation of life can be measured in months, not years, so the patient has nothing to lose by undergoing total bilateral adrenalectomy.

My experience of this operation is limited to twelve patients, but the results have been most encouraging so far. The five patients originally reported [1] continue to lead active useful lives, and five subsequent cases are equally encouraging. The longest survivor (20 months) was probably the most acutely ill patient of the series, having very severe cardiac failure with pulmonary congestion and pronounced visual disturbance.

Cardiac failure with generalised œdema, pulmonary congestion, and severe eye changes are no contra-indication to adrenalectomy, and can be dramatically relieved by the operation, even if there is no change in the hypertension. If the renal function is depressed the patient will die, but it is difficult to define the limits of safety. Both of my postoperative deaths were of patients with a urea clearance under 60% of normal.

There is therefore no doubt that bilateral total adrenalectomy can prolong life and relieve symptoms in cases of malignant hypertension, provided the kidneys are not seriously damaged. If further progress is to be

3. *Lancet*, 1951, ii, 1180.
4. Sarkany, I., Birdwood, G. F. B. *Ibid*, 1954, ii, 1282.

1. Hanley, H. G. *Proc. R. Soc. Med.* 1954, 47, 1013.

made, operation must be undertaken before the renal changes are too advanced. In my experience so far, renal failure, as shown by our present crude tests, can develop suddenly and progress rapidly (in one case so rapidly that within three months the opportunity for surgery had passed), and probably renal-function tests should be repeated more often in hypertensive patients, in the hope of detecting an early malignant phase. This is certainly more important than repeated blood-pressure estimations, since hypertension per se appears to be simply a symptom of some disease that we have yet to discover.

London, W.1. HOWARD G. HANLEY.

NOBECUTANE AS A WOUND DRESSING

SIR,—Since the introduction of 'Nobecutane' into this country, only one report on its use has appeared, when Rob and Eastcott [1] confirmed its value following application to 200 clean surgical wounds in patients resident in hospital. During recent months, over 400 dressings on both inpatients and outpatients have been carried out at the Royal Free Hospital, and it was thought that our own experiences would be worth recording.

Nobecutane is an acrylic resin dissolved in a mixture of acetic esters.[2] It is inflammable until dry and has no effective bactericidal power. In view of results previously reported and our own, the latter does not seem to be a disadvantage.

Method of Application.—As supplied at the present time, much of the fluid may be wasted, but experiments with a spray show this to be the ideal method of application. If a spray is not available, the standard bottle cap can be modified by inserting a narrow-bore tube through a hole drilled in the screw cap, and an ordinary catheter spigot used to keep it closed when not in use. This modification can easily be carried out in any hospital workshop. The narrow-bore tube allows the fluid to be used more sparingly, and a small brush will ensure that a thin layer is applied. The brush can be cleaned with acetone, which will also remove the dressing if it cannot be stripped off cleanly with ordinary dressing forceps.

Infection.—In the occasional case, slight hyperæmia of the wound edges appears on the second or third postoperative day. This subsides without local or systemic effects in the course of the following 24 to 48 hours. In no "clean" surgical case has wound infection developed. When used on potentially infected wounds in which an abscess has subsequently developed, the elasticity of the dressing has allowed the tissues to stretch, and its transparency enables progress to be observed. The film is so resilient that it must be stripped off before adequate drainage can be obtained. Where post-operative drainage has been required through the original incision rather than through a separate "stab," the wound has in addition been covered in the immediate vicinity of the drainage tube by a gauze and wool dressing.

Intestinal Fistulæ.—In a limited number of cases we have used the method for protecting the skin round gastric, intestinal, and pancreatic fistulæ. In one really uncontrolled colostomy it was not satisfactory because the fluid contents could not be limited to a reasonable surrounding area. The dressing was stripped up from the periphery and could not be made to adhere again. In all other cases skin protection was adequate.

Cosmetic Results.—Since nobecutane has vasodilator properties, accurate hæmostasis is essential; but this is an advantage to the patient, if somewhat time-consuming for the surgeon. A continuous skin suture is more effective in controlling oozing than a series of interrupted sutures. Providing this is inserted carefully, there is little risk of necrosis of the wound edges. The continuous suture is also more easily removed. In many cases we have not used skin sutures, obtaining accurate co-aptation of the skin edges by means of interrupted subcutaneous or intradermal sutures of fine plain catgut or silk. This technique is especially valuable for thyroidectomy incisions and for other operations on exposed parts of the body. A thin film of nobecutane helps to maintain this apposition and yet allows unrestricted movement.

Minor Outpatient Operations.—Although these procedures are of little danger to life they do throw a considerable burden on a busy casualty department, where dressings are constantly being removed and replaced. In these cases nobecutane has also proved satisfactory, despite the extra strain put upon the dressing during the patient's normal work. The transient pain experienced during application to an unanæsthetised surface is no worse than that produced by dabbing iodine on a cut.

Advantages and Disadvantages.—These have been enumerated by Rob and Eastcott, and our experience confirms their findings. In addition we have found that immersion in water for ordinary washing purposes is not precluded, and this also eases the work of the nursing staff. One of our outpatients even went swimming and returned the following day with his dressing intact. It has been said that patients do not like having their wounds exposed to view. This has not been our experience, for the vast majority of patients appreciated being able to move about in comfort—and to compare incisions with their fellows and to show them to their visitors.

Nobecutane is a satisfactory surgical dressing for both inpatients and outpatients. It is economical and time-saving, and it does not increase the incidence of wound infections. Skin sutures are not always necessary, thus improving the cosmetic results. It is superior to conventional dressings in those sites where these are difficult to apply or keep in place.

I wish to thank the surgeons of the Royal Free Hospital for allowing me to use this dressing on their patients, and Miss Irene Cade, F.R.C.S., for help in the follow-up.

The Royal Free Hospital,
North Western Branch,
London, N.W.3. A. G. ELLERKER.

PHILOSOPHY AND THERAPEUTICS

SIR,—As a student of philosophy over many years, may I comment on some of the statements made by Professor Alstead in his article of Dec. 25?

He asks why man is susceptible to disease when he might have been created immune to them all. This is another version of the age-old question "If God is all powerful, why did He not create the perfect man?" This view of creation is hardly compatible with Professor Alstead's statement, "Most of us visualise the development of living organisms through the ages as a process of gradual evolution." Few philosophers and scientists today would disagree with this. But the purely materialistic theory of the universe, which dominated the 19th century and which regarded man as a mere biological accident, is becoming hardly tenable today. A number of scientists have, in our time, turned away from scientific materialism to a spiritual understanding of the universe more in agreement with religious belief. In his remarkable book *Human Destiny*, Lecomte du Nouy shows that science finds a purpose evident in the history of life, which rises above the laws of matter. Since the acquirement of conscience and tradition, man can and must play a part in his own destiny. "Human progress therefore," says du Nouy, "no longer depends only on God, but on the effort made by each man individually. By giving man liberty and conscience God abdicated a part of His omnipotence in favour of His creature and this represents the spirit of God in man."

Disease may be regarded as one of the many hazards to which man has always been subjected, like death by starvation, floods, marauding animals, and the more modern hazards of road accidents and mass warfare. If he is to survive and attain to the perfect spiritual development in accordance with the divine plan, man must continue to rise above his accidental environment. The physician should have no doubt as to the importance of his contribution to the final issue by his continued fight against disease and his endeavour to allay human suffering wherever he finds it.

Of modern therapeutic achievements Professor Alstead asks: "If these chemical and mechanical contraptions are in fact of fundamental importance in the evolvement of human destiny, why have they only now become available?" I suggest that the answer is to be found in the secularisation of medicine. As long as medicine, science, and philosophy were bound to mysticism and magic, experimentation was not encouraged; in fact, it was regarded as doubting the divine plan. Once the scientific age was ushered in, medicine flourished and today is the golden age of therapeutics

1. Rob, C. G., Eastcott, H. H. G. *Brit. med. J.* 1954, ii, 17.
2. Hogeman, K. E., Olow, B. *Nord. Med.* 1953, **10**, 362.

Professor Alstead rightly emphasises the importance of preserving the soul of man, but he is very ready to sacrifice the body, which he regards as clumsy and erratic in contrast to the human mind and its activities. He makes the challenging statement that the vehicle for the spirit of man could equally well have been the simple amœba rather than "the appallingly complex organism of the mammal," and he finds it hard to believe that it would matter in the slightest. To my way of thinking the moral and spiritual development of man, which represents the present stage in the evolutionary process, would have been impossible without the development of the human brain through the activity of which man's humanity and spiritual qualities are manifest. How can these higher qualities have been developed or made manifest at the evolutionary level of the amœba?

In his pentateuch, *Back to Methuselah*, Shaw has envisaged the final stage of human evolution as a disembodied spirit. But to be disembodied implies having been embodied, and the body of man, be it ever so frail and subject to suffering and disease, is in my opinion the only medium through which the divine work of evolution can be continued and fulfilled on the spiritual plane.

Hounslow, Middlesex. C. BEAVEN.

EMERGENCY BED SERVICE

SIR,—Early this month the Emergency Bed Service invited some senior members of the medical profession to visit the operations room to see the service at work in times of stress.

The visitors were surprised at the amount of work in hand, and it was suggested that it would be profitable for all hospital admission officers to visit Fielden House on or before their appointment, and thus to acquire a more vivid impression of the volume of emergency cases, for which admission is required in London, than they could by dealing only with cases in their own hospitals.

The committee think this suggestion excellent, and are very glad to invite all those in the Greater London area to whom urgent cases are offered, and who have the responsibility for admission or otherwise, to visit the service and study its work. An appointment by telephone (Hop 7181) would be a great help to those in charge.

Fielden House, 28, London Bridge Street, S.E.1. G. F. ABERCROMBIE Chairman, Emergency Bed Service.

CONTROL OF RATS AND MICE

SIR,—I quote from your annotation of Dec. 18 on this subject:

"Today, the main strong poisons of choice are zinc phosphide, arsenic, and antu (alphanaphthylthiourea)—all after prebaiting—but antu is unsuitable for use against *R. rattus*. The Oxford workers are properly sceptical of the value of '1080' (sodium monofluoroacetate) despite the enthusiasm with which it was first received in the U.S.A. . . ."

These conclusions seem to me somewhat sweeping and they certainly are not in accord with our own conclusions on the use of rat poisons in the Port of London where, as a result of extensive field experience and investigation, rat poisons such as barium carbonate, red squill, arsenious oxide, and antu have been abandoned in favour of zinc phosphide and, more recently, the anticoagulant 'Warfarin' and the poison sodium monofluoroacetate (popularly known as 1080). Field trials are now in progress with another water-soluble rodenticide which promises to be a further useful addition to the range of rodenticides.

There is ample evidence in this country to prove the usefulness of these new rodenticides in selected operations—zinc phosphide with a variety of solid bait bases, warfarin with both a variety of solid bait bases and as a water solution and 1080 as a water solution or as a soak for solid bait bases. While only zinc phosphide and warfarin are in general use throughout the country, all three have been proved and have been regularly used in the Port of London for several years.

1080 can be dangerous if the correct methods of dispensing and adequate safety precautions are not applied, but no difficulty whatever has been experienced by trained operators working in the Port of London. It has proved in their hands to be a highly valuable, efficient, and readily acceptable rodenticide capable of a decisive kill overnight. By its use it is also possible to secure an appreciable saving in man-hours, an advantage of paramount importance in port conditions where prompt action is essential. It is by the selective use of zinc phosphide, warfarin, and 1080 that the Port of London is kept remarkably free from rodent infestation.

J. GREENWOOD WILSON Medical Officer of Health, Port of London.

Guildhall, London, E.C.2.

OPERATIONS ON THE HEART

SIR,—I read with interest your leader of Dec. 25 and find myself in agreement with much of what Dr. Cort wrote in his letter last week.

Our paper[1] was concerned only with metabolic disturbances observed after mitral valvotomy. Administration of saline after operation is indicated only if the patient is sodium-depleted. This was occasionally observed in those with mitral stenosis who had been free of œdema but had nevertheless been treated with a low-salt diet and mercurial diuretics in preparation for operation. After valvotomy there is an exudate from the wound and pleural cavity of fluid rich in sodium. If the body-sodium content has been considerably reduced preoperatively, and this secondary loss after operation is large and uncorrected, true sodium depletion may develop. In such exceptional circumstances, but in them alone, hypertonic saline produces a rapid and lasting improvement in both the clinical and biochemical state of the patient.

The fall in serum-sodium concentration regularly observed during the first week after operation is not usually associated with a loss of sodium from the body and is certainly not an indication for giving additional saline. This fall is transient and is due at least in part to water retention. I do not wish to encroach on your space to discuss the wider aspects of hyponatræmia in cardiac patients apart from operation on the heart valves, and should only like to endorse Dr. Cort's remarks regarding hypertonic saline. In patients with persistent hyponatræmia the body-sodium content measured by isotope dilution methods is commonly greatly increased in spite of the low serum concentration. The administration of saline simply aggravates the condition by leading to further retention of water in excess of sodium.

Sheffield. G. M. WILSON.

MASKED EPILEPSY

SIR,—I think it might fairly be said in criticism of Dr. Wallis's paper (Jan. 8) that he provides a very good example of the tendency described in his own quotation from Tom Jones: "Every physician almost hath his favourite disease, to which he ascribes all the victories obtained over human nature . . ."

It is true, of course, that epilepsy is common, and that sensory or, less commonly, motor manifestations may occur alone, but other recurrent disturbances of function in childhood are very much commoner. For a large group of these disorders in which various combinations of pallor, vomiting, headache, abdominal pain, and pyrexia make up the picture, many of us use the provisional diagnostic term periodic syndrome, which is convenient if only because it replaces unsatisfactory ones such as cyclical vomiting, abdominal migraine, vasovagal attacks, and "acidosis." These recurrent episodes vary from the simple bilious attack to bizarre symptom-complexes which are diagnostic puzzles, and of which some lie in the borderland of epilepsy, classically described by Gowers.

This, I suggest, is as far as we can really go at present. "Masked epilepsy" is surely just as unsatisfactory as

1. Wilson, G. M., Edelman, I. S., Brooks, L., Myrden, J. A., Harken, D. E., Moore, F. D. *Circulation*, 1954, 9, 199.

"abdominal migraine," at least while we have no method of removing the mask; and neither response to phenobarbitone nor, as yet, electro-encephalography can be said to be reliable mask removers.

Rapid and easy extension to cover more and more of the phenomena of ill health has always been the danger of the unifying concept; and it is only too easy to say that bilious attacks, temper tantrums, nightmares, bed-wetting, obscure recurrent pains, and many other transient disorders may be due to masked epilepsy, though it is difficult to see how this helps. We can try phenobarbitone in some of these cases without making a diagnosis which is likely to continue to have distressing social implications in spite of all our reassurances.

Royal Berkshire Hospital, Reading. J. J. KEMPTON.

SIR,—I was most interested in Dr. Wallis's article on "Masked Epilepsy" as I believe that the condition he describes, whatever name one gives it, is not uncommon.

I note that he obtains good results from treatment with phenobarbitone, but he does not mention any toxic effects from the drug. I have found that protracted administration of phenobarbitone to children frequently produces behaviour disorders and irritability; and I now always warn parents about this, and if necessary use another anticonvulsant drug such as primidone.

Bexhill-on-Sea. LESLIE SCOTT.

CORTISONE AND CLOSED CRUSH INJURIES OF THE HAND

SIR,—Crushing injuries of the hands in which the palmar and digital tissues are permeated by an effusion of blood and the palmar spaces are distended rank among the most crippling of injuries. Treatment is long, recovery slow and incomplete, and permanent disability common.

Only two cases are here presented, but their progress was so extraordinary that the matter seems worth bringing to the notice of all who are required to treat hand injuries.

CASE 1.—A girl of 6 was admitted to hospital after a concrete clothes-post had fallen on both her hands and crushed them on a concrete slab. The hands were covered with superficial abrasions and grossly swollen. The palms were ballooned and tense and the fingers immobile. There was no bony damage. The child was shocked and in great pain. The hands were moulded as far as possible into the position of function, pressure dressings applied, and the hands elevated.

Six days later the abrasions were healing, but no active movement was possible and passive movement still caused pain. Cortisone acetate (12·5 mg. daily in divided doses) was then given for fourteen days' On the fifth day of treatment there was no pain, and far less tension and tenderness. The interphalangeal joints moved actively through a full range. On one side the range in the metacarpophalangeal joints was half normal; in the other it was nil. On the fourteenth day of treatment there was no pain even on squeezing the hand, and the range of movement in all joints was almost full. One month later, apart from very slight thickening on the back of the left wrist, two independent examiners found no abnormality.

CASE 2.—A man of 40 was admitted after crushing his left hand in a machine at work. There was a laceration of the left thumb, and the swollen left hand resembled a blown-up rubber glove, the palm being 3 in. thick from front to back—about double the thickness of the right hand. No active or passive movement was possible in the fingers. Under general anæsthesia the wound was excised and sutured; it did not extend into the palmar hæmatoma. The hand was moulded as near to the position of function as possible and a pressure dressing applied. Seven days later cortisone acetate (25 mg. four times daily) was started and was continued until the total intake was 1400 mg. Dressings were removed on the tenth day after injury.

The laceration healed by first intention. On the eighth day of cortisone there was no pain on moving the fingers. The interphalangeal joints moved through a full active range, and the metacarpophalangeal joints lacked only 20° of flexion. The hand was slightly thickened.

Six weeks after injury an independent examiner agreed that there was full movement in all the joints of the hand and a grip almost equal to that of the right hand. There was slightly reduced sensation to pinprick over the front of the index finger.

It seems impossible to explain the astonishing speed of recovery of these injuries except through the agency of cortisone. Healing of the abrasions and wound, which was allowed to proceed for six and seven days respectively before giving cortisone, was not delayed by the dosage used, and no side-effects were observed. The method seems worthy of further trial.

I am indebted to Dr. J. E. Royds for his advice and for supervising the administration of cortisone.

Ashford Hospital, Middlesex. DENNIS WALKER.

HEAT TO THE HEART

SIR,—I have read with interest Mr. Pickerill's letter (Jan. 15). He rightly recommends the application of heat to the cardiac region to allay attacks of angina. He recommends the use of a small electric pad or a handkerchief rung out of water at a temperature of 110°F.

Anything hot emits infrared irradiations. But surely a much more effective method of applying heat would be by means of an infrared lamp emitting infrared rays from a black body element. The heat from such a source is penetrative, analgesic, and antispasmodic. The measures suggested by Mr. Pickerill would, of course, be useful if an infrared lamp is not available.

Experience has taught me that infrared irradiation applied for half an hour or so over the cardiac region, combined with a course of general ultraviolet irradiation, will greatly lessen the incidence of anginal attacks.

Eastbourne. W. ANNANDALE TROUP.

"TAKE A COUPLE OF FAT VIPERS"

SIR,—Nicholas Culpeper, Gent. Student in Physick and Astrology, in the *Pharmacopœia Londinensis: or the London Dispensatory* (Sixth Edition, 1655), makes two references to the medicinal use of vipers:

On p. 45 under the heading of "Living-Creatures" he writes: "The Flesh of Vipers being eaten (I take it our English Adder to be the true Viper, though happily not so venemous as they are in hotter countries) clear the sight, help the vices of the Nerves, resist poyson exceedingly, neither is there any better remedy under the Sun for their bitings than the Head of the Viper that bit you, bruised and applied to the place, and the flesh eaten, you need not eat above a dram at a time, and make it up as you shall be taught in Troches of Vipers.

Referring to Troches he continues (p. 268): "Although a man may make them into what form he pleaseth, yet they are usually made into little flat thin Cakes, of a scruple, or twenty grains in weight, *plus minus*: some print Images (as of Serpents upon Troches of Vipers) upon them, some guild them with leaf-Gold, some do neither.

Does the expression "Head of the Viper that bit you" take chronological precedence over "the hair of the dog"?

Mile End Hospital, London E.1. W. G. SEARS.

SIR,—I have an old family recipe for viper broth which resembles the one described last week by Mr. Pond, but which states that the chicken must be tightly stuffed with parsley, that pimpernel and mace be added, and that, after the viper is cut up and added, the whole must be rendered to one-third of its original amount. Perhaps the chlorophyll content, rather than the viper, accounted for its asphrodisiac reputation.

Oxted, Surrey. CHRISTOPHER HOWARD.

GENITO-URINARY TUBERCULOSIS

SIR,—Tuberculosis, it has been said (? erroneously), does not affect both the genital and the urinary systems as frequently in the female as in the male. Published data supporting this are hard to find. Search of publications on genito-urinary tuberculosis is quite often disappointing, because they do not mention female *genital* lesions which may occur before or after the urinary lesion is diagnosed.

It would be interesting to know the incidence of genital lesions among the female patients in the series of 240 cases of genito-urinary tuberculosis treated by Mr. Cosbie Ross and his colleagues and described in last week's issue.

Department of Pathology,
Chelsea Hospital for Women,
London, S.W.3. MAGNUS HAINES.

SULPHONAMIDE SENSITIVITY

SIR,—The following case of sulphonamide sensitivity has unusual features.

The patient was a married woman of 33, with no significant past illnesses or family history. She had had no previous skin trouble except for an attack in February, 1954, of subocular and facial œdema: this lasted four days, and cleared with anti-histamines. No cause for it was discovered.

On Aug. 13, 1954, she went on holiday to Eastbourne. Because of recent "flu" and nasal catarrh she was supplied with some sulphadimidine tablets, and told to take 1 g. every eight hours. On Aug. 18 she returned from Eastbourne feeling very unwell. Her temperature was 101·8°F, her pulse was rapid, and a papular-bullous erythema was present on all exposed areas, with "butterfly" distribution on the face. All affected areas were œdematous. The eruption, which worsened rapidly, was thought to be a sulphonamide-sensitivity rash, so the sulphadimidine was stopped and treatment was begun with promethazine hydrochloride 25 mg. three times a day.

Three days later, on Aug. 21, she was admitted to hospital, since her temperature was still 101°–102°F, the rash was worse, and she had a severe cough. The differential diagnosis at this time was: (*a*) sulphonamide-sensitivity rash; (*b*) lupus erythematosus; or (*c*) bullous erythema multiforme.

X-ray examination of the chest and blood-count on Sept. 10 were normal, and the Q-fever cephalin-flocculation test was negative; the erythrocyte-sedimentation rate (E.S.R.), however, was 125 mm. in one hour (Westergren). An evening pyrexia (up to 100°–101°F) persisted until Sept. 14. On Sept. 15 the E.S.R. was 57 mm. in one hour; and serum-proteins were 9·4 g. per 100 ml.

On Sept. 20, when the E.S.R. was 42 mm. in one hour and the albumin/globulin ratio was 1·14, the patient was discharged from hospital. By this time the rash had disappeared, but there was residual staining of the lesions. Marrow-films examined on Oct. 11 for lupus-erythematosus cells were negative. Tests for cold agglutinins were also negative.

By Nov. 2 the E.S.R. had fallen to 9 mm. in one hour and the patient felt quite well, although she complained of her hair falling out. A month later there was still some loss of hair, and still slight pigmentation at the sites of the original lesions. The troublesome cough persisted.

Sulphonamide sensitivity following exposure to light is common. This case is of interest in view of the following points:

(1) The sulphonamide used (sulphadimidine) is the least toxic of all sulphonamides, and moreover it was used here in small doses—1 g. eight-hourly for five days (total 15 g.).

(2) The E.S.R. was exceedingly high at the onset of the illness (125 mm. in one hour), and it did not return to normal until seven weeks later.

(3) For one month there was an evening pyrexia (up to 101°F), which was accompanied by a cough. That, in association with the high E.S.R. and the character of the rash, was highly suspicious of lupus erythematosus; this diagnosis, however, was excluded by the marrow smear on Oct. 11. A similar rash may be found in acute disseminated lupus erythematosus or erythema multiforme.

Falling hair is common after sulphonamide sensitivity, but the ultimate prognosis is good. Marked residual pigmentation at the site of the lesions often persists till three months after the onset of the illness.

My thanks are due to Dr. Quentin Evans and Dr. H. A. Treble for permission to publish this case, which was under their care in the Kent and Canterbury Hospital.

Faversham, Kent. EDWARD D. FOX.

SANATORIA

SIR,—Never at any time have there been sufficient beds available for the treatment of pulmonary tuberculosis in this country. The result has been that one of two policies was adopted: either patients were kept in sanatoria for long periods in order that quiescence might be reached with or without surgery; or patients were given shorter periods of treatment and discharged non-quiescent, so that other patients could be admitted. In the latter case the butter, as it were, was spread thinly over as many slices of bread as possible. The experience of institutions adopting the other alternative shows that patients can be successfully treated, given time and determination by the patient and his advisers.

It is my belief that bed rest, like Christianity, is often said to have failed when in reality the answer is that it has seldom been tried.

The present comparative plethora of beds offers us an opportunity to tackle in earnest for the first time the problem of the chronic case, which has so far proved insoluble, except in institutions where the interests of the individual case were paramount and the shortening of a waiting-list a secondary consideration.

Liverpool. D. OSBORNE HUGHES.

VENEREOLOGY AND DERMATOLOGY

SIR,—It is surprising that Dr. Nicol (Jan. 15) criticised my letter (Jan. 8) without knowing the local conditions in East Kent, and that he did so with so many incorrect statements.

I did not plead: I commented on the possibility and the advantages of a combined post in venereology and dermatology in that particular area. Venereology was an independent specialty long before the National Health Service became effective in 1948; it never has been entirely separate, although that is the agreed policy. There is no evidence that our administrators have considered the problem solved, and their policy is still to staff the clinics with experienced consultants. In America, however, the *Journal of Venereal Diseases* has ceased publication, and at least one famous venereologist has decided to extend his interests and style himself specialist in chronic diseases.

A dermatologist recently appointed in East Anglia replaced a venereologist, but Dr. Nicol does not say that the retiring venereologist was also a dermatologist and that the advertisement stated that an extension of the dermatological services was envisaged. Anyhow, why did these venereologists in East Anglia and East Kent elect to transfer to bigger towns? Perhaps it supports my view that there is not enough work to hold the interest of a venereologist in some areas.

I did not say: "It is a bad thing to have too much specialisation." I said there was still room for the general surgeon and the consultant physician, and that the broader view was sometimes of value. I did not say a senior registrar in venereology could become competent in dermatology by working in both departments for three years: I said there were many *consultants* competent in both specialties; and, as Mr. King and Dr. Russell (Jan. 1) said that registrars appointed to one of the specialties had no opportunity of acquiring specialist knowledge of the other, I cited one registrar who is working in both departments; there are several others. My registrar will appreciate Dr. Nicol's congratulations but he knows that East Kent offers insufficient scope for him in venereology.

With regard to local conditions, Dr. Nicol will be pleased to hear that the clinics are adequate, and they are well sited at the hub of transport radiations; they are probably unsurpassed for accessibility in any part of the country. The only major seaport in the area is Dover, and that does not have busy clinics. The liaison with other parts of the hospitals was

good: it still will be if the appointed consultant is domiciled locally and is thereby easily available and has the broader view; it may not be so if his enthusiasm lags from insufficient work, or if he is often away on journeys to London to augment his clinical material. I think, in view of the public-health and social aspects of the work, that a candidate with a primary interest in venereology is desirable for the area, especially as he will have dermatological colleagues.

As I see it, Dr. Nicol is not clear about the position; and with this letter my previous letter (Jan. 8) remains to outline conditions in East Kent. I am convinced that the essential requirements for that area are, as I stated, exceptional, and that a combined appointment is needed. I now plead it.

Seamen's Hospitals,
London. DAVID ERSKINE.

NORADRENALINE AND ESSENTIAL HYPERTENSION

SIR,—Dr. Litchfield (Nov. 27) finds fault with my hypothesis that excessive secretion of noradrenaline is responsible for raising the blood-pressure in essential hypertension because:

(1) Hypertension may persist after the removal of a phæochromocytoma.

(2) Numerous observations by von Euler and others on the excretion of adrenaline and noradrenaline in the urine have disproved my hypothesis.

(3) Barnett et al.[1] found that noradrenaline infusions and phæochromocytoma could be distinguished from essential hypertension by reduction in hand and forearm blood-flow and frequently by pallor of the skin and bradycardia.

I shall answer these points seriatim.

(1) That hypertension may persist (usually at a lower level) after removal of a phæochromocytoma is generally accepted, and, as Dr. Litchfield says, "secretions of the tumour initiate another usually irreversible hypertensive mechanism." There is, however, nothing mysterious about the nature of this mechanism; it is that of renal hypertension.

Excessive amounts of noradrenaline secreted by a phæochromocytoma or an overactive adrenal medulla raise the blood-pressure and, in time, bring about in a certain proportion of cases a narrowing of the renal arterioles (nephrosclerosis). Since we know from Goldblatt's work [2] that renal ischæmia is the cause of renal hypertension, it is not difficult to account for the "irreversible hypertensive mechanism" found in some cases of phæochromocytoma.

(2) A high urinary excretion of pressor amines has been found consistently in phæochromocytoma and is to be expected when we consider the large amounts of these substances present in the tumour. Though figures comparable to these have never been found in other forms of hypertension, there is suggestive evidence that the excretion of noradrenaline may be moderately increased in essential hypertension.

In 1947 Holtz et al.[3] found an excessive excretion of noradrenaline in this condition (100–200% above normal). In 1952 von Euler,[4] in a study of 500 cases of hypertension, reported that excretion of pressor amines was normal in 60% and increased in the remaining 40%. In 1953 Burn [5] found that the urinary excretion of noradrenaline varied directly with the age—an interesting finding when one bears in mind that the old have higher blood-pressures than the young. He also showed that in a group of moderate hypertensives (mean 170 mm. Hg systolic) the excretion of pressor amines was higher than in a control group of normotensives (80 µg. as compared with 71 µg.).

Though this difference may not be statistically significant, it may still be important in the light of the hypothesis advanced in my paper. For if the level of the blood-pressure is the result of a balance between two antagonistic endocrine glands and if the blood-pressure-lowering substance is deficient, then normal or only slightly increased amounts of noradrenaline might cause an appreciable elevation in the blood-pressure. In other words, normal noradrenaline figures might represent a relative increase vis-à-vis a deficient blood-pressure-lowering substance.

(3) Dr. Litchfield states that Barnett and his associates could distinguish between phæochromocytoma and essential hypertension by a reduction in hand and forearm blood-flow. The question which naturally arises is how these workers knew they were dealing with essential hypertension. From pathological evidence and Goldblatt's work we know that about 75% of cases of essential hypertension are complicated by varying degrees of renal hypertension. Thus, in the majority of cases of hypertensive disease there are two distinct mechanisms responsible for the elevation of the blood-pressure. Furthermore, it is often impossible to decide in a given case of hypertension whether the mechanism responsible is renal or not, for extreme degrees of renal failure may be associated with a normal blood-pressure, while normal renal function may be found with hypertension of purely renal origin.

What is the hand and forearm blood-flow in rena hypertension, in mixed essential and renal hypertension, in pure essential hypertension? An answer to these questions and a knowledge of the diagnostic criteria used by the investigators would help in assessing the validity of their evidence.

Barnett et al. state that "essential hypertension is not associated with a reduction in . . . hand blood-flow." Abramson and Fierst [6] do not agree. In a study of 70 hypertensives and 90 normal subjects they found that "the average blood-flow was much less in hypertensive than in control subjects."

Bradycardia is not at all uncommon in essential hypertension. Normal and rapid pulse-rates, however, are also found. This is best explained by postulating the concurrent secretion of varying amounts of adrenaline. Besides, so many factors unrelated to these secretions affect the pulse-rate that it would be unjustifible to draw conclusions from this alone.

A pale sallow complexion is common in essential hypertension. As previously reported [7] this may become pink under thyroid treatment. In my limited experience of noradrenaline infusion (5 cases), I found that pallor appeared at the beginning of the infusion and also when the rate of flow was suddenly increased. When the drip flowed steadily there was little or no pallor, suggesting that the body was adjusting itself to the stimulus. In 2 cases when the blood-pressure was maintained at about 160 mm. there was no pallor. In 1 of these cases, shortly after the initial pallor had passed off there was intense flushing of both ears, which reminded me of the experiences of Burn on the perfused rabbit's ear. First in association with Dutta [8] and later with Robinson,[9] he repeatedly observed dilator responses to adrenaline instead of the expected constrictor ones.

It would appear then that noradrenaline hypertension may occur in the absence of bradycardia and of pallor. One might add that by stressing these details we confer on them an importance they do not possess. We shall soon be unable to see the wood for the trees.

Finally, a word on Dr. Litchfield's comment that my hypothesis is based on "very indirect evidence." In a short paper designed to stress other facts it was not possible to deal comprehensively with the evidence Dr. Litchfield requires. All one could do was to refer briefly to the more recent developments. The direct evidence of the distant and more recent past may be summarised as follows:

(1) Oliver and Schafer [10] in 1894 produced a marked rise in blood-pressure by injecting an extract of the adrenal medulla.

(2) Cannon [11] and his associates demonstrated that emotions such as fear and rage were associated with the outpouring of adrenaline into the blood-stream.

(3) Barger and Dale [12] in 1910 pointed out that the actions of adrenaline and the effect of sympathetic nerve stimulation were not always identical. They suggested that where differences occurred the sympathetic mediator was not adrenaline but a closely related compound, probably noradrenaline. Cannon gave the name sympathin E to this

1. Barnett, A. J., Blackett, R. B., Depoorter, A. E., Sanderson, P. H., Wilson, G. M. *Clin. Sci.* 1950, **9**, 151.
2. Goldblatt, H. The Renal Origin of Hypertension. Springfield, Illinois, 1948.
3. Holtz, P., Credner, K., Kroneberg, G. *Arch. exp. Path. Pharmak.* 1947, **204**, 228.
4. von Euler, U. S. *Congr. int. Biochim.* Paris, 1952; p. 39.
5. Burn, G. P. *Brit. med. J.* 1953, **i**, 697.
6. Abramson, D. I., Fierst, S. M. *Amer. Heart J.* 1942, **23**, 84.
7. Menof, P. *S. Afr. med. J.* 1950, **24**, 172.
8. Burn, J. H., Dutta, N. K. *Brit. J. Pharmacol.* 1948, **3**, 334.
9. Burn, J. H., Robinson, J. *Ibid*, 1951, **6**, 110.
10. Oliver, G., Schafer, E. A. *J. Physiol.* 1894, **16**, 1.
11. Cannon, W. B. Bodily Changes in Pain, Hunger, Fear and Rage. New York, 1929.
12. Barger, G., Dale, H. H. *J. Physiol.* 1910, **41**, 19.

substance responsible, among other actions, for vasoconstriction and elevation of the blood-pressure.

(4) Tainter et al.[13] in 1948 succeeded in resolving noradrenaline into its lævo and dextro isomers and made *l*-noradrenaline available for experimental study. All investigators found that it raised the diastolic and systolic blood-pressures consistently. It is widely distributed in the body (in all adrenergic nerve-fibres, in the blood, in the urine, in the adrenal medulla, and in chromaffin-cell tumours). It has been identified as the sympathetic mediator in which Barger and Dale, and Cannon and his associates, were interested.

It would appear, then, from these facts and those mentioned in my paper that noradrenaline excess (absolute or relative) is a likely cause of essential hypertension.

Johannesburg. PERICLES MENOF.

REINFORCING PLASTER-OF-PARIS

SIR,—The use of 'Glassona,' or cellulose-acetate glass fibre, in the making of splints is familiar to most. Its particular advantages are its rigidity, lightness, impermeability to water, and transparency to X rays. Of these advantages the most striking, to my mind, is its rigidity when set. It is so rigid that the removal of a forearm cast by cutting it down one side and springing it apart may be quite difficult. Its particular disadvantage in the treatment of fractures is the slow time of setting. Excellent use of its great rigidity, however, can be made in the reinforcement of plaster-of-paris. If it is applied on the top of a plaster which has already set the disadvantage of the prolonged setting-time is overcome, as it rests on a solid base and is not subject to distortion while drying.

I have found glassona of great benefit in the reinforcement of hip spicas around the groin and shoulder spicas around the axilla. The basic plaster should be applied with moderately hot water so that at the time of crystallisation a fair amount of heat is given off. If the glassona bandage is then applied after the manner of a figure of eight around the groin or axilla it will dry out fairly quickly because of the heat of the underlying plaster. No artificial aid to drying is required and the dangerous use of an electric drier is therefore eliminated. The glassona bandages are an excellent safeguard against cracking in the groin or axilla and permit of the application of a lighter cast, more permeable to X rays, than would otherwise be possible.

Lincoln County Hospital. DAVID F. THOMAS.

NOTES ON TRANSFUSION

SIR,—The Ministry of Health's booklet *Notes on Transfusion* (1954) is being revised. May I put in a plea for one alteration?

On p. 5 it is stated that if bottles of blood are punctured and not used within 24 hours they should be labelled "dangerous for patients." In those districts where no pilot tubes are supplied this causes difficulties. When blood is asked for and the bottles punctured for a direct match it is sometimes not used; for example, the surgeon may change his mind or the patient may die or recover before the blood can be given. In the area where I work, if this happens and I label the punctured bottle of blood after 24 hours as dangerous for patients and then need more blood for another patient, my blood-supply centre will tell me that no blood will be sent unless I first use the bottle that has been sampled. If I refuse to do this it means either withholding blood from a patient and possibly risking his life, or else giving a bottle labelled "dangerous for patients."

If a catastrophe occurred and it transpired that the bottle had been punctured more than 24 hours before (and so might be infected), the pathologist would be open to censure and perhaps to heavy damages.

It may be argued that the statement in the booklet is advice and not an instruction or a directive. The imprimatur, title, and wording suggest a directive; but even if it is simple advice, when handled by a lawyer in court, it would carry great weight, so it becomes tantamount to a directive.

May I suggest that the Ministry bring in a non-separable pilot tube as a standard fitting, but until then surely, in common sense and common justice, the advice in the booklet should be altered.

CLINICAL PATHOLOGIST.

13. Tainter, M. C., Tullar, B. F., Luduena, F. P. *Science*, 1948, **107**, 39.

CORTICOTROPHIN AND SPLENECTOMY IN ACQUIRED HÆMOLYTIC ANÆMIA

SIR,—It has been stated that if three, or at the most four, blood-transfusions do not control idiopathic acquired hæmolytic anæmia, splenectomy should be performed.[1] While some cases fail to respond to combined splenectomy and transfusion alone,[2 3] a number of authors have reported encouraging results from corticotrophin (A.C.T.H.) or cortisone treatment.[4 5] Unfortunately not all patients have benefited significantly from hormones,[5 6] while in some cases an initial satisfactory response could be sustained only by continuing corticotrophin or cortisone.[7] The toxic effects of these drugs may, however, make it impossible to continue treatment,[4] and prolonged therapy followed by splenectomy may result in unsatisfactory wound healing and burst abdomen; moreover, a second course of hormones may be less effective than the first.[8] We therefore concluded that those patients who had not improved with blood-transfusion might be treated most successfully by splenectomy performed during the first course of corticotrophin. We have so far treated 3 patients in this way.

A male clerk aged 17, a schoolgirl aged 9, and a housewife aged 29, all presented with typical clinical and laboratory findings including pyrexia, tachycardia, jaundice, severe anæmia, splenomegaly, peripheral reticulocytosis and spherocytosis, increased red-cell fragility, a positive direct Coombs test, normoblastic hyperplasia of the bone-marrow, and increased fæcal urobilinogen excretion. No abnormal hæmolysins were detected, but the clerk's serum contained an auto- and a pan-agglutinin active at 4°C, and an auto-agglutinin active at 20°C in saline. There was also a trace of auto-agglutinin active in albumin at 4°C only. The schoolgirl's serum contained auto- and pan-agglutinins active in saline and albumin at 4°C, and a trace of pan-agglutinin active in saline and albumin at 18°C. The housewife's serum contained auto- and pan-agglutinins active at 4°C, 20°C, and 37°C in both saline and albumin.

As repeated blood-transfusions failed to induce a satisfactory remission in any of them, corticotrophin (25 mg. intramuscularly every six hours) was given for eight days in the first case and for ten days in the third case prior to splenectomy. 15 mg. of the hormone was given intramuscularly every six hours to the schoolgirl for five days before splenectomy. Gradually diminishing doses were given after the operation for six, four, and ten days respectively. The housewife had postoperative right basal pneumonia which responded to treatment including antibiotics. This incident was followed by mesenteric thrombosis from which she recovered when treated with heparin and ethyl biscoumacetate ('Tromexan'). The other two patients gave rise to no anxiety after the operation.

The three patients have remained well and have led normal lives for twenty-four, fifteen, and twenty-three months respectively in spite of a positive Coombs test, serum auto-agglutinins, and spherocytosis, which persist. The pan-

1. Dameshek, W., Schwartz, S. O. *Medicine, Baltimore*, 1940, **19**, 231.
2. Dameshek, W. *Clinics*, 1943, **2**, 118.
3. Millichap, J. G. *Arch. Dis. Child.* 1952, **27**, 222.
4. Gardner, F. H., McElfresh, A. E., Harris, J. W., Diamond, L. K. *J. Lab. clin. Med.* 1951, **37**, 444.
5. Davidson, L. S. P., Girdwood, R. H., Swan, H. T. *Brit. med. J.* 1952, ii, 1059.
6. Preliminary Report to the M.R.C. by the Panel on the Hæmatological Applications of A.C.T.H. and Cortisone. *Ibid*, 1952, i, 1261.
7. Sacks, M. S., Workman, J. B., Jahn, E. F. *J. Amer. med. Ass.* 1952, **150**, 1556.
8. Aitchison, J. D. *Brit. med. J.* 1953, i, 78.

agglutinins are not detectable in the first two cases, but persist in saline and albumin at 4°C and 18°C in the housewife.

We thank Prof. E. J. Wayne for valuable help and criticism throughout; Mr. W. J. Lytle, Mr. Clifford Jones, and Mr. E. P. Kempsey for their excellent surgical coöperation; and Dr. C. C. Bowley and Mr. F. I. N. Dunsford, of the Regional Blood Transfusion Centre, Sheffield, for some of the serological findings.

Boston Group of Hospitals, Boston, Lincs. W. J. G. BARRIE.
Royal Infirmary, Sheffield. E. K. BLACKBURN.

ISOBEL CRIPPS CENTRE

Dr. RICHARD MEYER writes:

Dr. Barlow's assumption, in his letter last week, that this centre ignores research is incorrect. Mr. Neil has given me facilities to take full psychiatric histories from some of his pupils before treatment, and to follow up these people after treatment. He has had the courage to take on pupils who have not responded to orthodox psychiatric or physiotherapeutic treatment. I feel that his method deserves our critical coöperation, rather than destructive condescension.

Mr. CHARLES A. NEIL writes:

I wish to correct the faulty impressions given in Dr. Barlow's letter.

I am not teaching the Alexander technique, for although I trained with Alexander between 1932 and 1937 and owe a great deal to him and will always be grateful for what he has taught me, my methods, as a result of study of methods other than Alexander's both here and on the Continent, have undergone considerable change since 1937, and differ both in detail of theory and in technique from Alexander's.

With regard to safeguards, this centre has a fully qualified medical adviser, who examines all the people who come here who are ill or suspected of illness and who are not already under medical care. I do not "deal" with such conditions as asthma in the sense that Dr. Barlow implies, but confine myself solely to teaching the pupil to manage his body better, and this with the approval of the pupil's doctor.

Public Health

Maternity and Child Welfare in Glasgow

Dr. Stuart Laidlaw, medical officer of health for Glasgow, reports [1] that in 1953 the infant-mortality rate (36 per 1000) was the lowest yet recorded in that city. As in other parts of the country, the decline in the rate over recent years is accounted for mainly by a reduction in the number of deaths after the first month of life; stillbirths and neonatal deaths show no corresponding decrease, yet many of these, Dr. Laidlaw remarks, could be prevented by better obstetric care and better education of the expectant mother. Consequently he regrets that attendances at antenatal clinics once again fell. Every effort was made to secure the coöperation of the general practitioners in advising expectant mothers to attend mothercraft classes and special consultant sessions at the clinics, but the response was very poor. Thus, of 2479 expectant mothers who attended these sessions, only 150 were referred by their family doctors.

Drawing attention to the continued need for educative work by the maternity and child-welfare services, Dr. Laidlaw reports that of the 58 violent deaths of infants under 1 year of age, more than half were from asphyxia following inhalation of vomit or regurgitation of food, and 23 were from suffocation by pillows, bed-covers, or over-laying. Among children aged 1–5 accidents and violence accounted for more deaths than any other cause; accidents in the home were responsible for 7 of the 21 deaths in this group, and road-accidents for another 7.

Regarding mental hygiene, Dr. Laidlaw reports that in Glasgow more attention is being paid to the preventive aspect of child psychiatry. A special "problems clinic" has been established, at which parents are helped to resolve tensions in the child's environment and to strengthen the child to cope with difficulties which cannot be removed. Cases in which definite breakdown has occurred are recognised in the clinic and referred to the larger child-guidance centres. During 1953, 110 patients attended the clinic, and in 32 a satisfactory solution was reached.

During 1953 the B.C.G. vaccination campaign was extended to school-children aged 13 years. Parental consent to vaccination was granted in 11,597 instances; 11,206 children proved Mantoux-negative, and 99·8% of these received B.C.G. vaccine. In recognition of this successful campaign, the National Baby Welfare Council has awarded the William Hardy shield to Glasgow for the most meritorious performance in children's welfare during 1953.

1. Report of the Medical Officer of Health, City of Glasgow, 1953.

Tuberculosis Waiting-lists in Scotland

Until 1954 the number of tuberculous patients awaiting admission to Scottish hospitals had at no time fallen below 1600; between March and September of that year, however, the numbers fell abruptly from 1997 to 841. This decline cannot be entirely attributed to a decrease in the prevalence of the disease. Commenting on the figures, Dr. I. M. Macgregor,[1] of the Scottish department of health, observes that in nearly all districts "there has been no evidence of a comparable reduction in the frequency of new notifications." In the first nine months of 1954 the number of notifications in Edinburgh and Lanarkshire was in fact 15–17% greater than over the equivalent period of 1953; and even in Glasgow, where the waiting-lists show the sharpest decline, notifications decreased by only 7%. Assessing the reasons for the reduction in the waiting-list, Dr. Macgregor says:

"More patients are now under active medical treatment in their own homes supplemented by periodic visits to the chest clinic. Waiting lists have been purged and substantially reduced by the removal of those no longer in need of hospital care. Although national statistics are not available there is evidence that a combination of hospital and home treatment is materially reducing the length of institutional care. There can be no doubt that recent advances in medical treatment, earlier case recognition and improved housing have brought an increasing number of the tuberculous within the range of effective cure without hospitalisation."

Smallpox in France

The French ministry of public health and population, in a message dated Jan. 8, reports that there have been 25 cases of smallpox in the Vannes area, with 2 deaths.

The 1st case occurred at the beginning of December in an unvaccinated child aged 1 year. The child's father had returned 10 days previously from Indo-China, where he had been in a hospital in which cases of smallpox were being treated. All persons resident in the Vannes area are being vaccinated.

A press report from Paris, dated Jan. 12, gives the total number of cases as 40, including 4 deaths, in five departments in Brittany, the largest number being in the Morbihan department.

Statistics for England and Wales

The Registrar-General has announced [2] provisional figures for the third quarter of 1954. Births amounted to 15·0 per 1000 population, as against 15·6 per 1000 in the corresponding quarter of 1953. The stillbirth-rate—22·9 per 1000 total births—was 1·9 higher than in the third quarter of 1953. The death-rate was 9·4 per 1000 population, compared with 8·9 in the third quarter of 1953. The infant-mortality rate—21 per 1000 related live births—was the lowest yet recorded for any quarter.

The home population of England and Wales is estimated to have been 44,274,000 on June 30, 1954; this is an increase of 500,000 since the last census (April 8, 1951). In the year ended June 30, 1954, persons aged 65 and over are estimated to have increased by 108,000, and children aged 0–14 by 96,000; persons aged 15–64 decreased in number by 20,000.

In the second quarter of 1954, deaths from respiratory tuberculosis (1657) were 9% fewer than in the corresponding quarter of 1953; and deaths from cancer (21,826) numbered 275 more than in that quarter.

1. Macgregor, I. M. *Hlth Bull., Edinb.* 1955, **13**, 4.
2. Registrar-General's Return for England and Wales for the quarter ended Sept. 30, 1954. H.M. Stationery Office. Pp. 27. 2s.

Obituary

HAROLD WORDSWORTH BARBER

M.A., M.B. Camb. F.R.C.P.

Dr. H. W. Barber, who died in London on Jan. 14 at the age of 68, was the first physician to be appointed to the staff of Guy's Hospital as a specialist in dermatology with no other duties.

He was born in Nottingham, the son of a solicitor; and he was educated at nearby Repton, from which he won a scholarship to Clare College, Cambridge. In 1908 he took a first class in the natural sciences tripos, and three years later he qualified from Guy's Hospital. In 1912 he was awarded the Arthur Durham travelling studentship. He had by then determined on a career in dermatology, and most of his year's tenure was spent in Paris; but he also studied under Unna in Hamburg. He returned to Guy's as medical registrar. He was also appointed dermatologist to the Evelina Hospital, and in 1915 to the Prince of Wales's Hospital, Tottenham. In that year he joined the R.A.M.C., and he served in India, Mesopotamia, German East Africa, and France. After demobilisation in 1919 he resumed the medical registrarship at Guy's, and soon afterwards he was appointed dermatologist to the hospital. In 1922 he was elected F.R.C.P. He served as president of the British Association of Dermatology and of the dermatological section of the Royal Society of Medicine; and he was consulting dermatologist to the Royal Navy.

(*Elliott & Fry*

In his Lettsomian lectures to the Medical Society of London in 1929,[1] Barber made a compelling plea for the integration of dermatology with general medicine and for more extensive training of the student in this subject. Of the student's training he said:

"... it is but logical that he should be first taught to see and interpret what he sees, and it is in imparting this faculty of observation and deduction that the dermatologist should find his chief métier in the early stages of a student's training."

And he concluded:

"... ignorance of the most elementary principles of the physiology and pathology of the skin is, it must be admitted, widespread among our profession. I believe this to be due partly to the fact that dermatology has been practically ignored in the qualifying examination, and partly to faulty teaching of the real significance of cutaneous disorders and eruptions in relation to general medicine."

The breadth of his view is partly explained in the following tribute from G. B. D.:

"From inclination, as well as upon the advice of Cooper Perry, Harold Barber chose to study dermatology, spending the greater part of his year abroad in Paris under Darier, with whom thereafter he maintained a lifelong friendship. In the department at Guy's he followed a line of great figures in medicine in the latter half of the 19th and the early 20th centuries—Addison, Gull, Samuel Wilks, Pye Smith, and Cooper Perry. Like his illustrious predecessors he possessed a profoundly interesting mind, and for a long while he may justly be said to have dominated thought in British dermatology. He was hardly ever content to accept morphology as the end of knowledge even for the moment, though he was probably as well equipped with knowledge of that aspect of dermatology as anyone living. He communicated his observations and ideas in a large number of papers written in impeccable style, always interesting and arresting, sometimes leaving the reader with the impression that the boundaries of pure reasoning had been perhaps a little overstepped, but always providing food for thought.

"Barber was a romantic and this was reflected in the elegance of his home and possessions and the beauty of his garden, which he tended himself. He found and enjoyed beauty everywhere in nature, including human nature. At the time that I knew him best he also enjoyed the simplest forms of recreation, deriving almost boyish pleasure from fiction of the more exciting type, from watching cricket, and from following the fortunes of his often disappointing County; even the bustle of a big railway terminus and a journey on a fast train gave him pleasure.

"With the qualities that he possessed of great erudition and enthusiasm and outstanding personal attractiveness, it was natural that he should attract to himself a large body of students of all ages who were convinced that there was no-one like Barber and never would be. Inevitably the same qualities brought him an overwhelmingly large practice with its attendant responsibilities and stresses. Barber worked far too hard all his life, but there is no doubt that he could, like Kipling's famous tramp, say at the end:

"So write before I die, he liked it all."

Dr. Barber married Juliette Louise, daughter of Mme. Veuve Champrenand, of Paris. There were no children of the marriage.

1. *Lancet*, 1929, ii, 363, 483, 591.

GLEB von ANREP

M.A. Camb., M.D. Petrograd, D.Sc. Lond., F.R.S.

Dr. Gleb von Anrep, who had held the chair of physiology in Fuad I University since 1931, died in Cairo on Jan. 9 at the age of 63.

Though of Swedish extraction, he was a typical Slav. He was born in St. Petersburg—practically in a laboratory, for his father, Prof. Basil von Anrep, who discovered the local anæsthetic action of cocaine, lived over his place of work. He studied medicine at the Medical Academy in St. Petersburg, and was still a student when he embarked on his research on conditioned reflexes.

He first visited this country in 1912 when Pavlov sent him to demonstrate to Starling the effects of vagus section on pancreatic secretion and in return to learn the technique of the preparation of secretin. At the end of that year he produced his first paper in the *Journal of Physiology* in which he showed that stimulation of the splanchnic nerves liberated adrenaline from the suprarenal glands, which contributed to the resulting rise in blood-pressure. In the following year he joined the Physiological Society.

That summer he again visited London to work at University College, and in 1914 he brought Babkin with him. They both returned to Russia on the outbreak of war in August. Anrep, who had qualified that year, served as a medical officer with the Imperial Army until Russia withdrew from the war in 1917. On his return to Petrograd he lectured for a time at the Institute of Experimental Medicine and took his M.D. degree. In 1918 he joined the forces of General Denikin. On their defeat he made his way to England, and in 1920 he was appointed an assistant in the department of physiology at University College. He continued his studies and obtained the degrees of M.SC. and D.SC. of the University of London. In 1925 he was naturalised and his father joined him to live in London.

In 1926 Anrep moved to Cambridge, where he was offered a lectureship, and two years later he was elected F.R.S. Other academic distinctions which he received in this country before he left for Egypt in 1931 included the Sharpey-Schafer prize, the William Mickle prize, the Sydney Ringer lectureship, and the fellowship of University College. He was also appointed to a Cooper Lane lectureship at Stanford University, California.

C. L. E. writes: "Anrep was a most attractive and dynamic personality—an entertaining raconteur and lecturer, with a wide knowledge of physiology, and an elegant if temperamental experimenter with a terrific capacity for work. He was a fine linguist, and he spoke Arabic well. During his time in Cairo he became an expert and intrepid desert explorer. His admiration for Starling was only exceeded by his admiration for his first master, Pavlov. The account of the conditioned reflexes which he wrote for *Recent Advances in Physiology* in 1925 was the first account of the subject to be given in English, but he knew the already large literature of the subject so intimately that he dictated the article in a very short time."

ROBERT JOSEPH WILLAN

C.B.E., M.V.O., M.S. Durh., F.R.C.S.

Mr. R. J. Willan, emeritus professor of surgery in the University of Durham and honorary consulting surgeon to the Royal Victoria Infirmary, Newcastle upon Tyne, died on Jan. 12 at the age of 77.

He was the second son of Mr. John Willan, J.P., and he was educated at Durham School. For some years he was in business before he began his medical studies at Durham University. After graduating M.B. with honours in 1906 he became house-surgeon to Rutherford Morison.

On Morison's advice he came to London to take a house-appointment at St. Peter's Hospital for Stone, where he gained wide experience in cystoscopy and genito-urinary surgery. In 1908 he was awarded the Stephen Scott scholarship and visited many surgical clinics in the United States and in Canada. In the same year he took the F.R.C.S., and in 1909 the M.S. degree with first-class honours. On his return to Newcastle he became assistant to Rutherford Morison both in his classes at the College of Medicine and in his private practice. In 1908 Willan was appointed surgical registrar at the Royal Victoria Infirmary and in 1911 demonstrator in surgical pathology at the College of Medicine. In 1914 he was appointed to the honorary staff of the infirmary as assistant surgeon.

Willan's first association with the Services was with the Durham Light Infantry, in which he held a commission before he took up medicine. After qualifying he transferred to the R.N.V.R. as a surgeon lieutenant, and when war broke out in 1914 he was accordingly mobilised with that Service, in which he received special promotion to the rank of surgeon lieut.-commander in 1915. At that time many medical students were serving as surgeon probationers on destroyers and were often the only medical staff available. To help them Willan wrote a surgical vade-mecum—a small handbook full of useful advice and practical tips which they all appreciated. During the war he attended Prince Albert (later King George VI) in his convalescence after an operation, and he was appointed M.V.O. for his services. Before he retired from the Service in 1933 at the age-limit he was the senior captain in the R.N.V.R., and he held the appointment of honorary surgeon to the King from 1930 to 1933.

When he took up civilian practice again after the war he was appointed full surgeon at the Royal Victoria Infirmary. He also lectured on clinical surgery in the university. Apart from his hospital work and teaching duties he played a full part in professional circles. His period as chairman of the honorary medical and surgical staff, from 1931 to 1938, was made difficult by the dispute over the affairs of the College of Medicine, but he managed to preserve the balance and under his control the controversy was excluded from the hospital. In 1935 he was appointed to the chair of surgery. From Rutherford Morison he had learnt the importance of recognising first principles, and he taught them to his students and showed them how to recognise the common things in disease. He invented his "hats pegs" to aid their memories and his classes were always popular. He also did much to foster postgraduate education in Newcastle, and he founded the Dormie Club which brought practitioners and consultants together at golf several times a year.

When the second world war came, Willan had no commission, for he was over age; but he was recalled to the Royal Navy in 1942 as honorary civilian consulting surgeon for the North of England area. In 1944 he was given the rank of temporary surgeon rear-admiral, with duties which took him to all the Naval stations in the northern half of these islands. The use of the aeroplane made travel easy and he enjoyed this appointment immensely. He was the first retired officer of the R.N.V.R. to attain flag rank in the Royal Navy. In commemoration of this honour he presented his sword to the Tyne division R.N.V.R. "for the use of the officers in the Division."

C. P. G. W. writes:

"I first met Willan in the Navy during the first world war when we were both at Scapa Flow. He served in H.M. Hospital Ship *Plassy* while I was in *Garth Castle*. We spent many evenings discussing every aspect of surgery and first-aid. After the war I was fortunate enough to be asked to examine at Newcastle for the finals in surgery when Willan was professor of surgery at that great school. Although he had a bent for urology he was in fact a general surgeon. He was a good teacher and a first-class operator who had worked with such surgeons as Rutherford Morison and George Grey Turner. As a member of the Moynihan Club he often visited surgical clinics abroad and was in constant touch with Continental surgery. He was an active member of the council of the College of Surgeons from 1939 until 1947 and he was extremely interested in all its activities and attended the College council club regularly until a few months ago.

"Willan was delighted when during the second world war he was asked to become a temporary surgeon rear-admiral, and he thoroughly enjoyed his work and gave his best to the Navy he loved so well. It was during this period that he damaged his eye while casting for salmon; the hook penetrated his orbit and he had to submit to the removal of the eye. This distressed him because he thought he might have to give up his appointment. But Sir Sheldon Dudley, who was medical director-general to the Navy at that time, sent him a signal which rejoiced his heart—'Nelson managed with one eye and so can you.'"

J. G. writes:

"Willan was a sympathetic chief who worked hard himself and expected others to do the same. His early business training and his Naval service taught him the value of regularity and of routine methods. There was never any doubt who was responsible for the treatment of each patient in our wards, and he gladly gave us advice whenever it was asked for. His work was done with care and promptitude and he was content to delegate other duties and responsibilities so long as he knew they would be dealt with conscientiously. By keeping to a well-planned week he got through a busy time-table. He was usually in the hospital six days out of seven and nothing escaped his notice. He believed in relaxation at regular intervals and he tried to get two rounds of golf a week. In the fishing season he continued to spend a day or two on the Tweed and nothing thrilled him more than to grass a salmon.

"The use of large incisions, taught him by Rutherford Morison, made his surgery look easy. He believed in the antiseptic method, adequate drainage, and strong sutures. For a time he used BIPP as Morison prescribed and proved its value. He was the first to use the cystoscope in Newcastle; he developed the use of radiography on the exposed kidney to make certain that every stone had been removed, and he introduced to the hospital the practice of slow decompression of the urinary bladder for chronic retention. In prostatic surgery he gradually came to rely on the two-stage operation, because most of the cases were old and far advanced, preferring the open method to endoscopic resection. As a student in the dissecting-room I can remember him practising incisions upon the knee-joint to see which gave the best exposure of the semilunar cartilages, and as a result he adopted the J-shaped approach. One of his earliest publications was on acute peptic ulcer perforation and in this he described for the first time the transverse retraction ring which crosses the epigastrium mid-way between the xiphoid and umbilicus, and drew attention to it as a helpful sign in doubtful cases.

"One of the high spots in his career occurred early in the first war when he accompanied Prince Albert, during his convalescence, to Balmoral. The Prince shot his first stag and duly blooded Willan. Later Willan received the M.V.O. from the hands of King George V. Willan was the oldest member of the order and he attended its services in the Savoy Chapel with great regularity.

"Throughout his life he enjoyed renewing old associations, and friends were always welcomed at his London flat. In the same way he appreciated having as dressers students who were

also old Durham School boys, like himself, or sons of his practitioner friends. He lived his life to the full, doing his work with zest, yet enjoying every other association."

Professor Willan married in 1910 Miss Dorothy Eleanor Shawyer. She died in 1949 and he leaves two daughters.

MARY BUCHANAN LEE

L.R.C.P.E.

Dr. Mary Lee, who died on Jan. 6, was the second woman to practise medicine in Liverpool. After qualifying in Edinburgh in 1895 she went straight to Liverpool, where she worked first at the old Maternity Hospital in Brownlow Hill and later at the old Samaritan Hospital in Parliament Street as a postgraduate student, for at that time no women were eligible for hospital appointments. Quickly, however, she built up a large practice among women and children. Later she was appointed the first woman doctor for Post Office employees in Liverpool and became the local woman medical adviser to the Treasury. During the first world war, she travelled several times a week to Manchester to serve on the medical boards for recruits for the Women's Army Auxiliary Corps.

A colleague writes: "Dr. Lee's patients included both rich and poor, but always her heart was among her poorer patients and the down-and-outs. Her kindliness, sympathy, and generosity were unbounded and she never spared time or personal effort to help those who were in trouble. Many women medical students owe their start in the profession to her kindly help. When the new health service started, she felt that she could no longer cope with a busy practice and she gave up almost all her professional work, though a few old patients could count on her help almost up to the time of her death."

WILLIAM JAMES O'DONOVAN

O.B.E., M.D. Lond., M.R.C.P.

THE staff of the London Hospital has never lacked personalities; but Dr. O'Donovan will long be remembered among them for the vigour and vividness of his thought and talk, and for his many kinds of ability. Though he was born at Tonbridge and brought up in England and abroad, he was the son of an Irishman, Patrick O'Donovan, who came from Clonakilty, and in his features, his eloquence, and his charm he was wholly Irish.

Such a man is not easily confined, and in becoming a dermatologist O'Donovan was never narrowly a specialist. Having qualified from the London Hospital in 1909, he had early turned to pathology, and in 1912 he had served in the pathology department for a further period as junior assistant director. In all his later dermatological work he retained his interest in pathology: he did not want to be no more than a "pimple doctor" and he even continued to make post-mortem examinations, holding that "the post-mortem table is as conducive to right thinking and the pursuit of truth as laboratory work at a teak bench." He had held a wide range of resident and junior appointments at the London before he committed himself to his specialty and became first assistant to the department of dermatology and syphilology. During the 1914–18 war, as chief medical officer of the Ministry of Munitions, his interest ranged from the problems of T.N.T. poisoning to the wider issues of industrial medicine, and he was for a time an associate editor of the *Journal of Industrial Hygiene*.

[*Walter Stoneman*

In 1926 O'Donovan succeeded the late J. H. Sequeira as physician to the skin department at the London, with charge of the syphilis block. Later he also had charge of the syphilis outpatient clinic until a separate venereal-diseases clinic was set up in 1930 by the London County Council. But perhaps his most important work was on the control and prevention of occupational diseases of the skin, and especially the rôle of tar and arsenic in causing cancers of the skin. He was also one of the first to describe the emotional factors in skin diseases, and his *Dermatological Neuroses* (1927) is something of a classic.

He gave freely of his time to many other hospitals besides the London, and he served on the staffs of Whipps Cross Hospital; St. James' Hospital, Balham; Lambeth Hospital; St. Andrew's Hospital, Dollis Hill; St. Andrew's Hospital, Bow; Queen Mary's Hospital, Stratford; and Dr. Barnardo's Homes. He was a member of the committee of convocation of London University, and for many years he gave devoted service, as secretary, to the association of Roman Catholic doctors, the Guild of St. Luke, St. Cosmas, and St. Damian. In 1951 he received from the Pope the honour of knighthood in the Order of St. Gregory the Great.

His lively mind and wide sympathies led him to take as keen an interest in politics as in medicine, and his skill both in repartee and as a speaker made memorable his Parliamentary contest, whether he won the election, as at Mile End in 1931, or lost it, as at Fulham in 1950. He was a former chairman of the University of London Conservative Association, and since 1937 he had been president.

During the late war O'Donovan served, with the rank of lieut.-colonel, as adviser in dermatology to the Forces in the Middle East. He described in our columns in 1946 his early observations on sensitisation to penicillin and the means of desensitisation he adopted. But he was not one to take too seriously the externals of Army life; and one of his junior officers recalls how he insisted on wearing a scarlet-lined cloak and managed to discomfit a series of inspecting generals who had hitherto supposed themselves conversant with military law.

O'Donovan was lecturer in dermatology at the London Hospital Medical College, and at the London School of Dermatology. These were two of his most important appointments; for in him the physician and the politician were subordinate to the teacher. The esteem in which he was held was shown when, on his retirement after twenty-six years on the Staff of the London, he was attended on his last teaching round by some 70 students and doctors. It is, indeed, in his students' memories and practice that he has engraved—by his wit, wisdom, and affection—his most enduring memorial.

P. H.-S., who was one of his registrars, writes:

"No young dermatologist could have served a more stimulating or considerate chief, and many besides myself owe their careers to his championship and guidance. 'O'D' had a great presence and a truly sparkling personality; he was a gifted and original speaker, possessing a lively forensic skill in argument. His learning and intellect were apparent; but those who knew him well recognised, too, a man of strong faith and courage. He would remind his students of the motto of their medical school—*Amara lento tempera risu* (temper the difficult things in life with a smile). They could not have had a better example."

A. J. K. writes:

"O'D was a man of stature in more ways than one. He was of course, distinguished in his own subject, but also very well informed in many other fields of knowledge. His gifted tongue and ready wit made him a first-class speaker, an entertaining companion, and a remarkable reliever of the tedious proceedings of dull committees. But his apparent light-heartedness covered deep convictions which he was prepared to defend at all times with the utmost courage and tenacity. He will be remembered for these things, for his teaching which owed more to the scholarly traditions of the past than to the utilitarian techniques of the present, and, by those who share his Faith, for his devoted service to the Guild of St. Luke, St. Cosmas, and St. Damian. May he rest in peace."

Dr. O'Donovan married Miss Ethel Smith, and she survives him with a son and two daughters. He died on Jan. 13 at the age of 68.

GEORGE HALL

C.M.G., M.D. Lond., B.Sc. Durh., F.R.C.P., J.P.

Dr. George Hall, formerly physician to the Royal Victoria Infirmary, Newcastle upon Tyne, died in that city on Jan. 10, at the age of 76, after a long illness.

He was born at Bishop Auckland, co. Durham, where he received his schooling. He had a distinguished academic career, graduating B.SC. from Armstrong (now King's) College, Newcastle, and then proceeding to his medical studies at University College, London. There he won the Bucknill entrance scholarship, the Cluff prize for anatomy, physiology, and chemistry, the gold medal and exhibition in physiology, and later the Atkinson Morley surgical scholarship. He obtained the London M.B. in 1903, the M.D. in 1905, and the M.R.C.P. in 1907. At University College Hospital he was house-physician to Dr. Sidney Martin, house-surgeon to Mr. Arthur Barker, and for nine months clinical assistant to Sir Thomas Barlow: he then became junior house-physician at the National Hospital, Queen Square, and after twelve months senior house-physician. From this post he resigned after six months to begin consulting practice in Newcastle, and in 1908 he was appointed assistant physician to the Royal Victoria Infirmary. In 1911 he was elected a fellow of University College, London.

[King's College, Newcastle

When war came in 1914 he was mobilised with the 1st Northern General Hospital, T.A., but he left in 1915 to join the Egyptian Expeditionary Force as officer in charge of the medical division, 17 General Hospital, Alexandria. For his services there he was appointed C.M.G. and was mentioned in despatches. During 1916–17 he was officer commanding the Military Infectious Diseases Hospital, Choubra, Cairo; and in 1918 he commanded the 59th General Hospital, British Expeditionary Force, France.

On his return to Newcastle he resumed the active life of a teaching-hospital physician together with consultant practice, chiefly in neurology. During the twenty years that he was assistant physician at the Royal Victoria Infirmary, his chief was Dr. Thomas Beattie. In 1927 he was appointed physician, and in the same year he was elected a fellow of the Royal College of Physicians. His interests were mainly neurological, and he was consultant neurologist to the Sanderson Orthopædic Hospital for Children. He was also physician to the Ingham Infirmary, South Shields, and to the Ministry of Pensions Hospital at Dunston Hill. He wrote a number of papers on general medical and neurological subjects, including one of considerable interest and importance on neuropathic keratitis. He retained a warm affection for London and for University College, and examined for London University and the Conjoint Board.

F. J. N., to whom we are indebted for some of these details, adds:

"Hall was a handsome man, of quiet voice, modest but sociable: equable in temperament, he was greatly liked by colleagues and students. He was meticulous in the discharge of his duties, gentlemanly, and cultured. He loved music and helped in the organisation of the Newcastle Chamber Music Society. He played a good game of golf. His latter years were made lonely by the death of his wife in 1949 and by the inevitable departure from home of his son and daughter."

P. H. M.-B. first met George Hall in Egypt during the first world war:

"He had that sweetness of nature, that coöperative forthcomingness which renders personal relations pleasant; yet he tempered his associations with shrewdness and judgment of character. I can never forget the kindness and consideration he showed as my o.c. at the Military Hospital at Choubra, and his counsel and help when I was endeavouring to establish a clinical laboratory service. This was his first contact with dysentery, malaria, and many other exotic diseases, but he soon mastered the essentials and accorded this service first-rank importance. As a successful and just administrator, his steady and calming influence rapidly radiated through the medical and nursing staffs, and we were indeed a happy ship. His knowledge of medicine was extensive and he was well versed in modern methods of treatment; but in the art of handling patients he was supreme."

F. M. R. W. says of him:

"The death of George Hall ends a friendship of some 40 years' standing, dating from the days when we worked together in Egypt during the first world war. I learned then to admire his clinical competence, his respect for his patients, his wry but philosophical acceptance of the burdens of Army hospital administration which became his when he was put in charge of an infectious diseases hospital, and his complete integrity.

"Separated by the distance between Newcastle and London from those days onwards, we met comparatively seldom, but to meet him was always a refreshment. We thoroughly enjoyed our preliminary grumbles about the way things were shaping in medicine and exchanged again our rose-coloured recollections of how much better everyone and everything was when we were younger. All this, of course, is one of the legitimate satisfactions of the elderly, is no more illusory than the prides and visions of youth, and is compatible with the quiet enjoyment of life that was Hall's until the death of his wife, a blow from which his spirit never recovered.

"He was always a sound and conscientious physician and a most unselfish and modest man, and to enjoy his friendship was a privilege."

C. E. K., who became acquainted with Hall towards the end of his career, recalls his especial affection for those trained in his old hospital and his pleasure in his election to a fellowship at University College.

"He was not self-seeking but a most kind, generous and constant friend. He was a modest person and his real worth as a man and as a physician was not immediately apparent, though in the course of time one became more and more conscious of it, so that those who esteemed him most were those who had known him longest. His best friends were his old friends and I doubt whether he had any enemies."

Appointments

South East Metropolitan Regional Hospital Board:

ADCOCK, F. A., M.R.C.S., D.M.R.D.: asst. radiologist, Bromley group.
AZZOPARDI, P. G., M.D. Malta, F.F.A. R.C.S., D.A.: consultant anæsthetist, Medway and Gravesend group.
BELL, G. J., M.B. Lond., D.P.M.: consultant psychiatrist and physician-superintendent, Darenth and Stone group.
BELL, I. G. D., M.B. Durh., D.M.R.T.: consultant in therapeutic radiology, Medway and Gravesend group.
BOYD, C. H., M.B. Leeds, D.A.: consultant anæsthetist, mid-Kent group.
DAVIES, D. G. H., M.R.C.S., D.A.: consultant anæsthetist, Greenwich and Deptford group.
EVANS, G. M., M.D. Lond., M.R.C.O.G.: consultant obstetrician and gynæcologist, Bromley group.
GLOVER, J. A., M.D. Camb., M.R.C.P.: consultant physician, south-east Kent group.
GOULD, J. H., M.B. Lond., M.R.C.P., D.P.M.: consultant psychiatrist, St. Francis and Lady Chichester group.
HAFNER, R. H. V., F.R.C.S.: consultant orthopædic surgeon, Medway and Gravesend group.
HART, M. F., M.D. Lond., M.R.C.P.: consultant in physical medicine, Bromley group.
HUBAND, E., M.D., D.P.M.: consultant psychiatrist, Canterbury child-guidance clinic.
JONES, J. S., M.B. Lond.: asst. chest physician, south-east Kent and Isle of Thanet groups.
KATARIA, M. S., M.R.C.S.: D.I.H., D.P.H.: asst. physician (geriatrics), Camberwell group.
KEAT, E. C. B. S., M.C., M.D. Lond., M.R.C.P.: consultant physician, Brighton and Lewes and mid-Sussex groups.
KING, M. B., M.D. Lond.: consultant pathologist, south-east Kent group.
NEWSTEAD, SHEILA M., M.B. Lond., M.R.C.P.: asst. pathologist, Orpington and Sevenoaks and Bromley groups.
PHILPS, F. R., M.R.E., M.D. Lond., D.P.H.: consultant pathologist, Eastbourne and Hailsham group.
SANDFORD, F. M., M.R.C.S., D.A.: consultant anæsthetist, Bromley group.
SAUNDERS, K. E., M.D. Lond.: asst. clinical pathologist, Lewisham group.
SZUMOWSKI, PIOTR, M.D. Cracow: clinician in tuberculosis (S.E.M.O.), Isle of Thanet group.
TEES, J. E., M.R.C.S., F.F.A. R.C.S., D.A.: consultant anæsthetist, Medway and Gravesend group.
TUFFILL, S. G., M.B. Lond., F.R.C.S.: consultant urological surgeon, Lewisham group.
VAN DORP, CAROLINA M., F.R.C.S., D.L.O.: consultant E.N.T. surgeon, Camberwell group.
WHEELER, P. H., M.B. Camb., M.R.C.P., D.P.M.: consultant psychiatrist and deputy physician-superintendent, St. Francis and Lady Chichester group.
ZAUSMER, D. M., M.B. Lond., D.P.M.: asst. psychiatrist, Crayford child-guidance clinic.

Notes and News

IDENTIFICATION OF NEWBORN INFANTS

Macclesfield and District Hospital Management Committee is to investigate a method of recording the identity of newborn infants which, it is said, reduces to a minimum the risk of errors.[1] Under the proposed system, which is practised in the United States, separate bracelets bearing the birth data are fastened to the wrists of the mother and her baby before they leave the labour ward: these bracelets can be removed only by the hospital staff. Until this arrangement can be made, all infants are to be identified in the usual way in the labour wards, and their sex confirmed and recorded the next day by a senior midwife. Printed identity cards, fixed to the cots, are to replace the strips of adhesive plaster formerly used; and the terms "boy" and "girl" are to be used by the maternity staffs instead of "male" and "female."

The committee's recommendations follow a recent incident in which the sex of a baby was recorded erroneously by a midwife both in her ward report-book and on the notification form.

CLINICS FOR SPASTIC CHILDREN

AN experimental outpatient centre for diagnosing and treating cerebral palsy in children under five is to be opened in the late spring at Cheyne Hospital for Children, 61, Cheyne Walk, London, S.W.3. The centre, founded by voluntary donations, will be administered by Chelsea Hospital Management Committee.

A new centre for spastic children was opened by Lady Derby on Jan. 5 at Heaton Moor Clinic, Stockport, Cheshire. The clinic, which has been established through the efforts of the National Spastics Society, provides physiotherapy, speech therapy, and other facilities for fourteen local spastic children. Occupational therapy will shortly be introduced for older children.

BRITISH STANDARD FOR ERYTHROCYTE-SEDIMENTATION TUBES

A NEW British standard (B.S. 2554: 1954) specifies dimensions, finish, and length and numbering of graduation marks of tubes for estimating the erythrocyte-sedimentation rate by Westergren's method, by Wintrobe's method, and by a micro-method. Copies of the standard (2*s.* 6*d.*) are obtainable from the British Standards Institution, Sales Branch, 2, Park Street, London, W.1.

University of St. Andrews

In recent examinations the following were successful:

M.D.—Avril Oatway (*with commendation*), B. O. Igwebe.

M.B., Ch.B.—Sheila E. Cheong, J. S. Cook, J. L. Crichton, Rene Dattner, P. A. E. Edmundson, J. G. McDonald, Anne M. MacGillivray, A. J. Mackenzie, J. A. C. Macmillan, Yvonne D. Symon, A. R. Taylor, Anne M. Thomson, Sheila K. Tod, T. H. E. Woods.

University of Glasgow

On Jan. 15 the following degrees were conferred:

M.D.—Alick Isaacs, * A. W. Sloan (*honours*); Robin Murdoch (*high commendation*); * R. G. MacFarlane, Jessie L. Sharp (*commendation*); R. D. H. Maxwell, R. W. Simpson.

M.B., Ch.B.—G. R. MacG. Barr, R. D. K. Buchan, P. R. Derblay, John Graham, W. H. Hunter, J. F. Hyslop, E. N. Icheke, R. W. McCallum, T. N. McComb, R. D. McDougall, M. J. McFadden, E. J. Macfarlane, W. M. Macfarlane, Ian McGregor, I. R. MacLaren, D. F. McLauchlan, Laurence Monaghan, Parsooramen Paratian, D. I. S. Robertson, Hugh Sutherland, Margaret A. F. Thom.

* In absentia.

International Pharmaceutical Congress

The general assembly of the Féderation Internationale Pharmaceutique is to be held this year in London from Sept. 19 to 23, under the presidency of Sir Hugh Linstead. Further particulars may be had from Mr. D. F. Lewis, F.P.S., 17, Bloomsbury Square, W.C.1.

Scottish Health Services Council

The eight new members appointed to this council until Dec. 31, 1957, include Dr. J. T. Baldwin, general practitioner, Penicuik; Dr. Catherine Harrower, O.B.E., general practitioner, Glasgow; Dr. S. I. A. Laidlaw, medical officer of health, Glasgow; and Dr. Douglas Miller, obstetrician, Royal Infirmary, Edinburgh. Dr. P. K. McCowan and Prof. G. M. Wishart are among those reappointed until Dec. 31, 1957.

1. *Macclesfield Times*, Dec. 16, 1954.

Royal College of Surgeons of England

At a meeting of the council on Jan. 13, with Sir Harry Platt, the president, in the chair, a Moynihan lectureship was awarded to Prof. H. Olivecrona of Stockholm. Dr. G. J. Cunningham, senior lecturer in morbid anatomy and histology at St. Bartholomew's Hospital, was appointed Sir William Collins professor of human and comparative pathology in the college, and Dr. John Vane was appointed senior lecturer in the department of pharmacology.

Diplomas of fellowship of the faculty of anæsthetists were granted to S. M. Wilson and A. H. Kasasian. The following diplomas were granted, jointly with the Royal College of Physicians:

D.O.—C. Chowdhary.

D.M.R.-T.—J. W. Logan.

D.C.H.—J. A. Kay.

D.A.—Catherine K. Adam, R. D. Allan, H. B. Aronson, A. C. Ashton, L. M. V. Attygalle, P. S. Barclay, K. W. Baruch, Kenneth Biss, J. A. Blundell, Janet C. Brash, June E. Brett, H. D. Browne, Mavis Buck, Fodla B. K. Burnell, Anthea M. Bushby, P. R. Chalk, Peggy J. Clark-Roberts, Sheila R. Clarke, J. A. Cluver, I. McI. Cochran, A. R. Cohen, Phyllis Connor, C. M. Conway, H. M. C. Corfield, L. G. B. Cumpston, P. N. Cunliffe, Muriel D. Dalby, Margaret C. D. Daniel, W. R. Daniel, E. J. D'Arcy, John Davenport, J. W. Desmond, J. D. Dickson, Maria T. D'Ocon Asensi, B. O. Dowdell, H. D. Doyle, Winifred B. Drew, Beatrice M. Evans, Rosemary A. Faull, Leo Feldman, Peter Flintan, B. G. Francis, J. E. S. Gould, Elizabeth Green, Joseph Greenan, N. R. Gupta, S. J. Halkett, I. M. Hallack, G. G. Harrison, H. I. Heffernan, R. S. T. Hey, J. D. Holdsworth, Thelma B. Hoyle, Elaine V. Hulse, Molly C. Jacklin, J. R. E. Jenkins, E. G. R. Jones, Kevin Kennedy, A. R. Kerr, Alexander Kilpatrick, D. W. King, Michael Lauchlan, Lucy T. Lee, Heather J. Lopert, Dorothy J. Lucas, G. F. Lynam, Ian Macphail, Esmee D. Martin, Prabhakar Mayabhai Mehta, Catherine H. McK. Mellen, Morag J. R. Millar, William More, B. D. Morison, Annie Mortell, S. M. MacD. O'Brien-Moran, Helen B. O'Hea, R. H. Oram, Buddug Phillips, A. P. Poole, Freda E. Prince-White, T. C. Probyn, Kaiwar Raghavendrarao Rama Rao, Stella J. E. Randall, Mullapudi Venkata Rao, J. T. Russell, Yvonne K. Russell, Dilip Kumar Sen, Margaret H. N. Smith, Basil Solomon, Jean P. Spalding, Henry Stabile, H. W. Stanley, Alan Thorogood, J. N. Thorpe, Francois Turrettini, C. H. van Hasselt, I. R. Verner, N. A. Vincent, Betty R. Warltier, A. N. E. Watt, R. P. Wise, W. S. Wren, T. M. Young.

D.L.O.—S. E. M. Bates, Chhedi Chowdhary, Abdul Rasul Nooralli Dhanji, D. A. T. Farrar, G. F. Fennell, A. N. Griffith, G. M. Homan, Bhabanand Jha, Mohammed Sadiq Khan, Pramod Mansukhlal Kothary, Mangat Varughese Kurian, J. T. Lees, N. G. McGuire, J. A. M. Martin, J. R. Purvis, Derek Russell, J. R. Samuel, Sat Dev Sethi, Thommandram Muthuswamy Srinivasan, Maung Maung Wain, Wijetunga Mudiyanselage Karunatilake Wijetunga.

On Monday, Feb. 14, at 4 P.M., at the college, Lincoln's Inn Fields, London, W.C.2, Sir Cecil Wakeley will deliver the Hunterian oration, on Hunter and Surgical Research.

Postgraduate Lectures in Psychiatry and Child Guidance

A course of lectures on these subjects will be given at the St. Marylebone Hospital for Psychiatry and Child Guidance, 48, Cosway Street, Marylebone Road, London, N.W.1, on Wednesdays at 5.30 P.M. Dr. Doris Odlum will give the first lecture on Feb. 2, on the relationship of psychiatry to general medicine. Other speakers will include: Dr. Colin Edwards, Dr. R. D. Newton, Dr. Michael Fordham, Dr. E. H. Larkin, Dr. E. A. Bennet, Mr. G. C. Knight, Dr. J. Loewenstein, Dr. J. Flind, Dr. F. D. Wride, Dr. A. McGlashan, and Dr. Colman Kenton. The lectures are open without fee to doctors and senior medical students.

Chronic Rheumatic Diseases

A course on this subject, including lectures, ward rounds, and practical demonstrations, is to be held at the rheumatism unit of St. Stephen's Hospital, Fulham Road, London, S.W.10, on Saturday and Sunday, March 19 and 20, under the chairmanship of Sir Adolphe Abrahams. Prof. Leslie Banks will give the opening lecture on Social and Economic Aspects of the Rheumatic Diseases. Other speakers will include: Dr. Francis Bach, Dr. Grace Batten, Dr. Raymond Daley, Dr. Philip Ellman, Mr. H. E. Harding, Dr. F. Dudley Hart, Dr. J. A. Purser, Dr. P. D. Samman, Dr. Frank Sargent, and Dr. Gordon Signy. Further particulars can be had from the Secretary, Fellowship of Postgraduate Medicine, 1, Wimpole Street, W.1.

International Embryological Conference

The annual meeting, in Brussels, of the editorial board of the *Journal of Embryology and Experimental Morphology* is to be accompanied by public scientific sessions on April 4–7. All interested scientists are invited to attend and to participate in the discussions on the papers read. Those travelling from the United Kingdom should communicate with Mr. D. R. Newth, PH.D., Department of Zoology, University College, London, W.C.1.; others should inform Prof. A. M. Dalcq, 97, rue aux Laines, Brussels.

Royal Edinburgh Hospital for Nervous and Mental Disorders

Dr. T. A. Munro, physician in psychological medicine to Guy's Hospital and physician to the Royal Bethlem and Maudsley Hospital, was appointed in November, 1954, to succeed Sir David Henderson as physician-superintendent to the Royal Edinburgh Hospital for Nervous and Mental Disorders.

Dr. Munro was educated at Edinburgh Academy and Edinburgh University and also at Harvard and Johns Hopkins Universities. After a period on the staff of the Edinburgh Royal Hospital, he was appointed to a Beit memorial research fellowship and worked for some years with Prof. L. S. Penrose, F.R.S., in the research department of the Royal Eastern Counties Institution at Colchester. He has published papers on the rôle of recessive genetic factors in the production of mental disorder and of phenylketonuria. During the war years he was at first in whole-time charge of a neurosis centre in County Durham in the Emergency Medical Service. Later he was a specialist psychiatrist in the Army at home and overseas. During the last victorious campaign of the 14th Army he was consulting psychiatrist to the Allied Land Forces in South-East Asia with the rank of brigadier, later being transferred to India as consulting psychiatrist to the Army in India. In early 1947 he was appointed physician in psychological medicine to Guy's Hospital.

National Association for the Prevention of Tuberculosis

The Fourth Commonwealth Health and Tuberculosis Conference of this association will be held at the Royal Festival Hall, London, from June 21 to 24. The speakers will include: Sister Mary Aquinas, Dr. P. V. Benjamin, Dr. M. G. Constantinides, Dr. George Day, Dr. Johannes Holm, Dr. W. P. D. Logan, Dr. E. L. Ross, Prof. Andrew Semple, Dr. Honor Smith, Dr. Harold Trimble, and Prof. Arvid Wallgren. Further details may be had from the secretary-general of the association, Tavistock House North, Tavistock Square, W.C.1.

International Hospital Congress

The mental well-being of patients in the general hospital is to be the main theme of the congress which the International Hospital Federation is to hold in Lucerne, Switzerland, from May 29 to June 3. Further particulars may be had from Captain J. E. Stone, hon. secretary and treasurer of the federation, 10, Old Jewry, London, E.C.2.

Laboratory Animals' Bureau Congress

Sir Howard Florey, F.R.S., will open this congress, which is to be held at Oxford on March 28 and 29. Other speakers will include Prof. J. H. Burn, F.R.S., and Prof. B. S. Platt. Further particulars may be had from the bureau, M.R.C. Laboratories, Holly Hill, Hampstead, London, N.W.3.

International Congress for Speech Therapy

This congress is to be held in Barcelona from Sept. 3 to 7, 1956. Further particulars may be had from Dr. J. Perelló, Provenza 319, Barcelona, 9, Spain.

Hunterian Society

The annual dinner of this society will be held at the Savoy Hotel, Strand, London, W.C.2, on Thursday, Feb. 10. Tickets (31*s.* 6*d.*) may be had from Mr. R. S. Murley, 95, Harley Street, W.1.

Higher Rates of Insurance Benefits and Pensions

The dates from which the increased pensions and other National Insurance and Industrial Injuries benefits, provided by the National Insurance Act, 1954 (see *Lancet*, 1954, ii, 1236) will be paid have now been fixed as follows:

April 25 for retirement pensions, widows' benefits, guardians' allowance, and industrial death benefits.
May 16 for maternity benefits.
May 19 for unemployment benefit, sickness benefit, and industrial injury and disablement benefits.

The higher National Insurance and Industrial Injuries contribution rates will be introduced on June 6.

Hospital inpatients, after certain periods of free treatment, receive benefits at reduced rates. These reduced rates are to be increased. For example, after eight weeks in hospital, the benefit of patients with dependants will be reduced by 7*s.* 6*d.* a week, normally leaving the married couple with 57*s.* 6*d.* a week (instead of 47*s.* 6*d.* after the present reduction of 6*s.* 6*d.*).

A memorial service for Sir Alfred Howitt will be held at the Chapel of St. Thomas's Hospital, London, S.E.1, at 12.15 P.M. on Thursday, Jan. 27.

Diary of the Week

JAN. 23 TO 29

Monday, 24th

MANCHESTER MEDICAL SOCIETY
9 P.M. (Medical School.) *General Practice.* Dr. Robert Newton: Recent Advances?

Tuesday, 25th

UNIVERSITY COLLEGE, Gower Street, W.C.1
5.30 P.M. Prof. J. Z. Young, F.R.S.: Language of Neurology, its Advantages and Limitations.
BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.) Dr. Janet Vaughan: Radiation Effects on Bone.
ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
8 P.M. *Medicine.* Dr. T. F. Fox, Dr. Hugh Clegg, Dr. A. M. Cooke, Dr. W. A. R. Thomson: Comments from the Editorial Chair.
ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.2
5 P.M. Mr. J. D. S. Flew: Induction of Labour.
INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5.30 P.M. Dr. G. C. Wells: Lupus Erythematosus.

Wednesday, 26th

ROYAL SOCIETY OF MEDICINE
5 P.M. *Endocrinology.* Prof. H. L. Sheehan, Mr. D. W. C. Northfield, Dr. J. E. Caughey, Dr. Oliver Garrod: Pituitary Syndromes.
INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
5.30 P.M. Prof. F. C. Ormerod: Types of Deafness
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. J. O. Oliver: Lupus Erythematosus.
HARVEIAN SOCIETY, 11, Chandos Street, W.1
8.15 P.M. Dr. R. Cove-Smith: Fitness—Facts and Fallacies. (Presidential address.)
BIRMINGHAM MEDICAL INSTITUTE, 154, Great Charles Street, Birmingham, 3
8 P.M. *Psychiatry.* Dr. Maxwell Jones: Concept of a Therapeutic Community.

Thursday, 27th

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
5 P.M. Mr. H. B. Stallard: Retinoblastomata treated by Radon Seeds and Radium Disks. (Hunterian lecture.)
BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine.) Prof. C. H. Gray: Chemistry of the Porphyrias.
RENAL ASSOCIATION
4.30 P.M. (Ciba Foundation, 41, Portland Place, W.1.) Mr. D. Innes Williams, Dr. R. Pugh: Renal Hypoplasias; Dr. S. W. Stanbury, Dr. M. D. Milne: Base losing Nephritis.
LONDON JEWISH HOSPITAL MEDICAL SOCIETY
8.30 P.M. (11, Chandos Street, W.1.) Dr. Macdonald Critchley: The Body Image.
LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant, Liverpool, 4
8 P.M. Dr. A. S. Woodcock, Dr. D. G. Miller, Dr. J. H. Pettit: Diagnostic Cytology.
UNIVERSITY OF ST. ANDREWS, Medical School, Small's Wynd, Dundee.
5 P.M. Dr. J. W. Smith: Postural Mechanism of Joints.

Friday, 28th

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
2 P.M. Mr. B. McN. Truscott: Carcinoma of the Female Breast.
4 P.M. Dr. H. S. Banks: Question and Answer on Common Infectious Diseases.
ROYAL SOCIETY OF MEDICINE
5 P.M. *Pædiatrics.* Dr. Reginald Lightwood, Dr. Martin Bodian, Dr. John Sutcliffe: Eosinophilic Granuloma; Letterer-Siwie Disease; Hand-Schüller-Christian Disease.
INSTITUTE OF LARYNGOLOGY AND OTOLOGY
3.30 P.M. Mr. Maxwell Ellis: Ulcers of the Mouth and Pharynx.
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. S. C. Gold: Lupus Erythematosus.
ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW, 242, St. Vincent Street, Glasgow.
5 P.M. Dr. E. M. McGirr: Radioactive Isotopes.

Births, Marriages, and Deaths

DEATHS

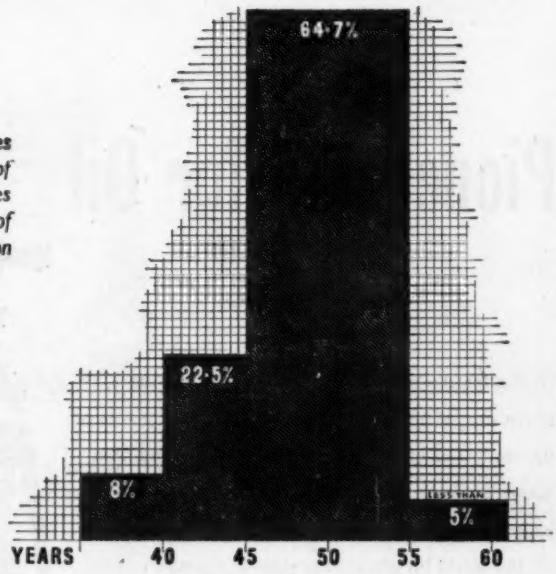
CASTELL.—On Jan. 1, at Finchley, Samuel Percy Castell, M.B., M.R.C.S., aged 61.

Sir Allen Daley has been elected chairman of the National Association for Maternal and Child Welfare.

The *British Journal of Anæsthesia*, which last year was published every two months instead of, as previously, every quarter, is now to appear monthly.

CORRIGENDUM: *Tuberculosis in Immigrants.*—In Dr. J. B. O'Regan's letter last week (p. 152) the first paragraph should end: "85% of school-leavers have been tested and vaccinated." In the fourth paragraph the figures for Tipperary (N.R.) should begin: "13 years, 40% (2145)."

Graph showing percentages of average age of onset of menopause, drawn from figures compiled by the Council of Medical Women's Federation in England.



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Dosage : *Initially 1-2 tablets daily, reducing when possible.*

Packs : *Perspex tubes of 25 tablets and bottles of 100, 250 and 500.*

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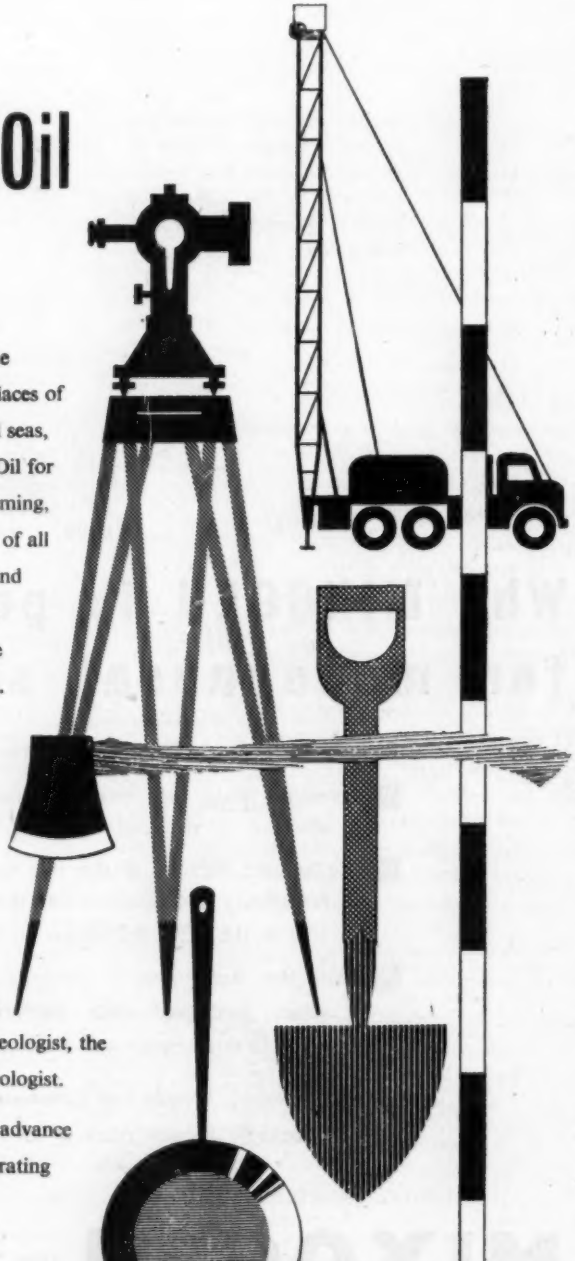

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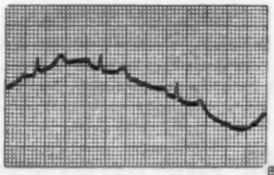

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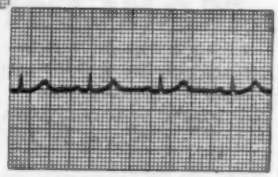

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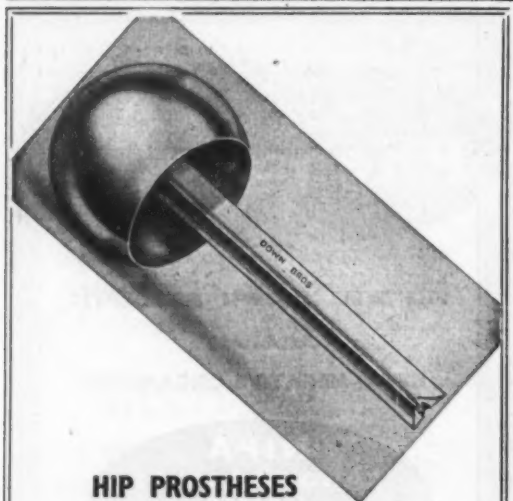

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Academic and Educational

FACULTY OF ANÆSTHETISTS
ROYAL COLLEGE OF SURGEONS OF ENGLAND

BOARD OF FACULTY ELECTION, 1955

Notice is hereby given that an election of 3 Fellows to the Board will take place on WEDNESDAY, 16TH MARCH, 1955, at 3.30 P.M. The following are the candidates for election :—

FELLOWS

Beard, Arthur John Wells (Fellow 1954).
Belam, Oswald Henry (Fellow 1953).
Boyle, Andrew Kerr (Fellow 1954).
Cope, Robert William (Fellow 1948).
Crawford, James Henry (Fellow 1953).
Galley, Archibald Herbert (Fellow 1948).
Hall, Vernon Frederick (Fellow 1948).
Harbord, Richard Penn (Fellow 1948).
Lloyd Williams, Katherine Georgina (Fellow 1948).
McConnell, William Samuel (Fellow 1948).
Murtagh, Bernard Leo Salmon (Fellow 1948).
Parry Brown, Arthur Ivor (Fellow 1949).
Pinkerton, Herbert Harvey (Fellow 1948).
Sandiford, Henry Brian Carlton (Fellow 1953).
Woodfield Davies, Hugh (Fellow 1948).

MEMBERS

No application has been received from any Member of the Faculty for Election to the Board, and there will therefore be 2 vacancies on the Board for the year 1955–56, and 3 vacancies will occur at the next Election in March, 1956.

W. F. DAVIS, Secretary.

Lincoln's Inn-fields, London, W.C.2.

COURSE IN THERAPEUTICS
at the
INSTITUTE OF ORTHOPAEDICS
28TH FEBRUARY–5TH MARCH, 1955

Monday, 28th February, Town Section, 234, Great Portland-Street, W.1. (Lecture Room)

10.00 A.M.–11.00 A.M.	Rest and Movement	Mr. H. J. BURROWS
11.15 A.M.–12.35 P.M.	Electrotherapy	Mr. H. J. SEDDON
1.45 P.M.–3.00 P.M.	Chemotherapy in Joint Tuberculosis	Dr. F. H. STEVENSON
3.00 P.M.–4.00 P.M.	Manipulation	Mr. K. I. NISSEN

Tuesday, 1st March, Town Section

10.00 A.M.–11.00 A.M.	Osteomyelitis	Mr. D. TREVOR
11.15 A.M.–12.40 P.M.	Treatment of Rheumatic Joint Disorders	Dr. P. D. SAVILLE
2.00 P.M.–3.00 P.M.	The Surgery of Spastic Paralysis	Mr. K. I. NISSEN

Wednesday, 2nd March, Town Section

10.00 A.M.–11.00 A.M.	Traction Injuries of Nerves	Mr. D. M. BROOKS
11.15 A.M.–12.40 P.M.	Bone Grafting and Plating	Mr. D. TREVOR
1.45 P.M.–3.15 P.M.	Arthrodesis and Arthroplasty	Mr. H. J. BURROWS
3.15 P.M.–4.15 P.M.	Tendon Injuries	Mr. J. I. P. JAMES

Thursday, 3rd March, Country Section, Brockley Hill, Stanmore, Middlesex (Hut 5)

9.45 A.M.–12.30 P.M.	Orthopædic Appliances; and Preservation of Movement in Joint Tuberculosis	Mr. J. A. CHOLMELEY
2.00 P.M.–3.30 P.M.	Treatment of Low Back Pain	Mr. P. H. NEWMAN

Friday, 4th March, Country Section

10.00 A.M.–11.00 A.M.	Clinical Demonstration	Mr. A. T. FRIPP
11.30 A.M.–12.30 P.M.	Clinical Demonstration	Mr. J. I. P. JAMES
2.30 P.M.–4.00 P.M.	Treatment of Pott's Disease cases	Mr. H. J. SEDDON

Saturday, 5th March, Country Section

10.00 A.M.–NOON	Plastic Surgery in Orthopædics	Mr. R. L. G. DAWSON

The fee for the course (including lunch and tea) is 7 guineas.

Early application should be made to the Dean at the Town Section.

UNIVERSITY OF LONDON
INSTITUTE OF ORTHOPÆDICS
ROYAL NATIONAL ORTHOPÆDIC HOSPITAL

WEEK-END COURSE FOR REGISTRARS
5TH AND 6TH FEBRUARY, 1955
PROGRAMME

Saturday, 5th February, London Section (Lecture Room), 234, Great Portland-street, London, W.1

Demonstration : Essentials of electrodiagnosis	Mr. D. M. BROOKS
Demonstration : Club foot	Mr. A. T. FRIPP
Demonstration : Dupuytren's contracture	Mr. J. I. P. JAMES
Clinical pathological demonstration	Dr. H. A. SISSONS and Staff

Sunday, 6th February Country Section (Treatment Block) Brockley Hill, Stanmore, Middlesex

Demonstration : Congenital dislocation of the hip	Mr. D. TREVOR
Demonstration : Problem cases	Mr. P. H. NEWMAN

The fee for the course (including coffee and lunch) is 2 guineas.

Early application should be made to the Dean at 234, Great Portland-street, London, W.1.

UNIVERSITY OF LONDON INSTITUTE OF EDUCATION

DIPLOMA IN THE CONTENT AND METHODS OF HEALTH EDUCATION

An ADVANCED COURSE for full-time students occupying 1 university year is open to qualified teachers, training college lecturers, medical practitioners, qualified nurses and others who are interested in the field of Health Education.

Candidates should have had experience in their own field and possess sufficient scientific background to satisfy the Institute that they can profit from the course.

The course is organised by the Institute of Education with the coöperation of the London School of Hygiene and Tropical Medicine and of the Central Council for Health Education.

Further particulars may be obtained from Miss W. M. WARDEN, Institute of Education, Malet-street, W.C.1.

UNIVERSITY OF MANCHESTER

DIPLOMA IN MEDICAL RADIOTHERAPY R.C.P. AND S.ENG.

A COURSE OF INSTRUCTION IN RADIOTHERAPY will begin at the Christie Hospital and Holt Radium Institute, Manchester, on MONDAY, 4TH APRIL, 1955. This will continue until the end of January, 1956, after which students must still spend a further 15 months working either in the Holt Radium Institute or in another approved hospital. Inclusive fee £52. There may be appointments under the National Health Service at Senior House Officer or Registrar level for successful candidates. Special consideration will be given to candidates possessing a higher qualification in medicine or surgery. Further information may be obtained from the Director, Holt Radium Institute, Wilmslow-road, Manchester, 20.

Applications must be sent to the Dean of Postgraduate Medical Studies, University of Manchester, not later than Monday, 21st February, 1955. All applicants will be required to attend for interview.

CENTRAL MIDDLESEX GROUP HOSPITAL MANAGEMENT COMMITTEE

A COURSE OF INSTRUCTION for General Practitioners in INDIVIDUAL AND GROUP PSYCHOTHERAPY AND SOCIAL PSYCHIATRY at the Marlborough Day Hospital, 38, Marlborough-place, N.W.8. Classes will be held twice each month on MONDAY at 8.30 P.M.

The Course will consist of 4 parts :—

1. Practical Case taking and diagnosis of psychiatric patients and their disposal.
2. Discussion and analysis of individual patients introduced by those attending the Course.
3. Psychiatric approach and choice of treatment in different types of psychiatric illness.
4. The part played by Group Psychotherapy and Social Psychiatry in the treatment.

Commencing date to be arranged.

Applications for Membership of Course to reach the Medical Director by 12th February, 1955.

SOCIETY OF APOTHECARIES OF LONDON

DIPLOMA IN INDUSTRIAL HEALTH

The next Examination will begin on MONDAY, 4th JULY, 1955. The following Examination will be held in December, 1955.

For Regulations apply Registrar, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

THE NUFFIELD FOUNDATION

MEDICAL FELLOWSHIPS

As part of its programme for the advancement of health, the Nuffield Foundation is prepared to award a number of Fellowships to highly qualified Men and Women of the United Kingdom, usually between the ages of 25 and 35, who wish to train further for teaching and research appointments in any branch of medicine.

Applications for awards in 1955 must be received not later than 1st May, 1955. The conditions of these Fellowships and the application forms are obtainable from the Director, The Nuffield Foundation, Nuffield Lodge, Regent's Park, London, N.W.1.

L. FARRER-BROWN, Director of the Nuffield Foundation.

MAKERERE COLLEGE. THE UNIVERSITY COLLEGE OF EAST AFRICA. Applications are invited for the post of FIRST ASSISTANT IN MEDICINE. Salary £1254–£1950 p.a. depending upon qualifications and experience. Temporary cost-of-living allowance 10% of salary (maximum £162 p.a.). Child allowance £50 p.a. (maximum £150 p.a.). F.S.S.U. Rent according to quarters provided £45–£85 p.a., including basic furniture. Paid passages for member of staff and family (up to 4 adult passages) on appointment and termination. Leave with full pay (3 months on completion of 21 months service). Duration of appointment normally 2 years : exceptionally a shorter period might be considered. A secondment arrangement would be welcomed.

Applications (6 copies), giving full details of qualifications and experience and the names of 3 referees, to be received by 10th February, 1955, by Secretary, Inter-University Council for Higher Education in the Colonies, 1, Gordon-square, London, W.C.1, from whom further information can be obtained.

MAKERERE COLLEGE. THE UNIVERSITY COLLEGE OF EAST AFRICA. Applications are invited for post of FIRST ASSISTANT IN OBSTETRICS AND GYNÆCOLOGY. Salary £1254–£1950 p.a. depending on qualifications and experience. Temporary cost-of-living allowance 10% of salary (maximum £162 p.a.). Child allowance £50 p.a. per child (maximum £150 p.a.). F.S.S.U. Rent according to quarters provided £45–£85 p.a., including basic furniture. Free passages for member of staff and family (up to 4 adult passages) on appointment and termination. Leave with full pay at rate of 3 months on completion of 21 months service.

Applications (6 copies), giving full details of qualifications and experience and naming 3 referees, to be received by 8th February, 1955, by Secretary, Inter-University Council for Higher Education in the Colonies, 1, Gordon-square, London, W.C.1, from whom further particulars may be obtained.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL. A LECTURER IN APPLIED PHARMACOLOGY AND THERAPEUTICS is required by the Department of Therapeutics. Salary will be according to the scale for a Junior Lecturer or Lecturer according to experience, with family allowance.

Applications, giving full particulars and the names of 2 referees, should be sent, before 8th February, to the Dean, St. Thomas's Hospital Medical School, London, S.E.1.

THE UNIVERSITY OF MANCHESTER. Applications are invited for a full-time post as READER or SENIOR LECTURER IN CHEMICAL PATHOLOGY. Candidates need not be medically qualified but should have special qualifications in chemical pathology. Salary scales are (*a*) for medically qualified persons, Reader £1800–£100–£2250, Senior Lecturer £1800–£100–£2000; (*b*) for non-medically qualified persons, Reader £1250–£50–£1600, Senior Lecturer £1150–£50–£1500. (Salary scales are at present under review.) Initial salary and status according to qualifications and experience. Membership of the F.S.S.U. and Children's Allowance Scheme.

Applications should be sent not later than 26th February, 1955, to the Registrar, the University, Manchester, 13, from whom further particulars and forms of application may be obtained.

THE UNIVERSITY OF MANCHESTER. Applications are invited from candidates with medical qualifications registrable in this country, for the post of ASSISTANT LECTURER or DEMONSTRATOR IN PATHOLOGY. Previous experience in pathology is not essential. Duties will consist of teaching and of participation in the Morbid Anatomy Service of Manchester Royal Infirmary. Opportunities will be available for research. Salary of Assistant Lecturer on a scale £700–£1000 p.a., with membership of F.S.S.U. and Children's Allowance Scheme; initial salary according to qualifications and experience. Salary of Demonstrator £700 p.a. with membership of Children's Allowance Scheme. Salary scales at present under review.

Applications should be sent not later than 26th February, 1955, to the Registrar, the University, Manchester, 13, from whom further particulars and forms of application may be obtained.

THE UNIVERSITY OF MANCHESTER. Applications for the post of LECTURER IN SOCIAL AND PREVENTIVE MEDICINE are invited from registered medical practitioners. The post is a joint appointment between the University and the City of Salford, whereby the person appointed, in addition to carrying out lecturing duties at the University, will carry out duties as an Assistant Medical Officer and School Medical Officer in the City of Salford. Salary on a scale (under review) rising to £1800 p.a. with membership of F.S.S.U. and Children's Allowance Scheme. Initial salary fixed according to qualifications and experience.

Applications should be sent not later than 1st March, 1955, to the Registrar, the University, Manchester, 13, from whom further particulars and forms of application may be obtained.

UNIVERSITY OF BRISTOL. Applications are invited for the post of DEMONSTRATOR IN PATHOLOGY which will be vacant from the beginning of April. Present salary scale £600–£700 p.a. according to qualifications and experience. This scale is subject to an upward revision which will come into force before the date of the appointment. The duties include assistance with the teaching of medical and dental students and general pathology for veterinary students, and the conduct of autopsies. Facilities for research and experience of diagnostic histology will be available.

Applications, giving full names, age, qualifications, details of education and experience, together with the names of not more than 2 referees, should reach the undersigned, from whom further particulars may be obtained, on or before 14th February, 1955.

H. C. BUTTERFIELD, Registrar and Secretary.

UNIVERSITY OF BRISTOL. Applications are invited for the appointment of LECTURER IN PHYSIOLOGY (grade II). Applicants should preferably have a medical qualification in which case the present salary scale is £900–£100–£1200 (bar)–£100–£1500 according to qualifications and experience. This scale is subject to an upward revision which will come into force before the date of the appointment. The appointment is subject to F.S.S.U. and a Family Allowance Scheme.

Applications (6 copies), with the names of 3 referees and copies of not more than 3 recent testimonials (if desired), should be forwarded to the undersigned, from whom further particulars may be obtained, not later than 14th February, 1955.

H. C. BUTTERFIELD, Registrar and Secretary.

Hospital Services: Senior Appointments

CHARING CROSS HOSPITAL, W.C.2. First Assistant in the Radiotherapy Department. Tenable for 1 year in the first instance. Salary within the scale £1500–£1950 p.a.

Further particulars and application forms (to be returned by 31st January, 1955) obtainable from the undersigned.

FRANK HART, Secretary to the Board.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) ASSISTANT ANÆSTHETIST (whole-time), Peace Memorial (196 Beds) and Shrodells (427 Beds) Hospitals, Watford. Salary £1500 (unless below 32 years)–£1950.

Applications by 21st February, 1955.

(2) PATHOLOGIST (whole-time), Napsbury Hospital, St. Albans (2138 Beds); for general pathological duties. Experience in neuropathology an advantage. Salary £1500 (unless below 32 years)–£1950.

Applications by 25th February, 1955.

Hospitals may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

ROYAL MARSDEN HOSPITAL, Fulham-road, London, S.W.3. Applications are invited for the full-time appointment of an ASSISTANT RADIOTHERAPIST (Senior Hospital Medical Officer grade). Salary £1500 at age of 32. Candidates must hold a Diploma in Medical Radiology.

Applications (12 copies), quoting age, education, qualifications and experience, and giving the names of 3 referees, should be sent to the undersigned by 14th February, 1955.

J. D. BANKS, House Governor.

BIRMINGHAM REGIONAL HOSPITAL BOARD.
Shrewsbury and Wolverhampton Groups of hospitals

Whole-time CONSULTANT CHILD PSYCHIATRIST, duties on behalf of Salop County Council (7 notional half-days weekly) principally in diagnosis and treatment of maladjusted children (including participation in work of Local Education Authority's Child Guidance Team) and in connection with Child Guidance Service, Wolverhampton County Borough (2 notional half-days). Appointment linked with Shelton Hospital, Shrewsbury (2 notional half-days). Wide experience, including good experience or training in child psychiatry, essential.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 7th February, 1955.

BIRMINGHAM REGIONAL HOSPITAL BOARD.
Wolverhampton Group of hospitals

Part-time CONSULTANT ANÆSTHETIST (3 notional half-days weekly). Duties at New Cross Hospital (2 notional half-days) and Royal Hospital, Wolverhampton (1 notional half-day). Wide experience specialty and possession of Fellowship or 2 part Diploma in Anæsthetics necessary.

Applications (15 copies), naming 3 referees, to Secretary, Regional Hospital Board, 10, Augustus-road, Birmingham, 15, before 7th February, 1955. Candidates may visit hospitals.

CARDIFF. THE UNITED CARDIFF HOSPITALS. Applications are invited for the appointment of SENIOR CASUALTY OFFICER at the Cardiff Royal Infirmary. The salary scale for this appointment will be within the range applicable to Senior Hospital Medical Officers. The appointment is for a period of up to 4 years.

Application forms can be obtained from, and should be returned within 21 days from the date of publication of this advertisement to, Secretary, United Cardiff Hospitals, Cardiff Royal Infirmary, Newport-road, Cardiff.

LEEDS REGIONAL HOSPITAL BOARD.

Whole-time ASSISTANT PATHOLOGISTS (Senior Hospital Medical Officer scale) for duties at hospitals in the :—

(1) Harrogate and Ripon Hospital Management Committee Group.

(2) Bradford area.

The successful candidates will work under the general guidance of the Consultants in charge of the departments concerned and will be required to reside in Harrogate and Bradford respectively.

Whole-time CONSULTANT RADIOLOGIST. The successful applicant to undertake duties approximately equally divided between Hospitals in the York A and Tadcaster and the Scarborough, Bridlington, Malton and Whitby Hospital Management Committee Groups and to reside in Scarborough.

Whole-time ASSISTANT PSYCHIATRISTS (Senior Hospital Medical Officer scale) for duties at the following mental hospitals, together with outpatient clinical duties at associated general hospitals :—

Stanley Royd Hospital, Wakefield (2000 Beds).

Storthes Hall Hospital, near Huddersfield (2500 Beds).

Further details with regard to the duties, accommodation available, &c., for the above appointments may be obtained from the Secretary to the Board.

Whole-time ASSISTANT ORTHOPÆDIC SURGEONS (Senior Hospital Medical Officer scale) for duties :—

(1) At hospitals in the Pontefract and Castleford Group.

(2) Mainly at the Huddersfield Royal Infirmary and other hospitals in the Huddersfield Group.

The persons appointed to be resident in or near Pontefract and Huddersfield respectively.

Applications (12 copies), stating age, qualifications and details of appointments held showing dates, with names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, by 19th February, 1955.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time resident post of CONSULTANT PSYCHIATRIST AND PHYSICIAN-SUPERINTENDENT at St. Augustine's Hospital, Chartham Down, near Canterbury, available on 10th August, 1955. A house will be available. Candidates should possess a D.P.M. and preferably a higher qualification; psychiatric hospital and outpatient clinic experience is essential, and candidates should have had experience in modern psychiatric therapeutic procedures, including psychotherapy and occupational therapy. Applicants may visit the Hospital.

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 5th February, 1955.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Whole-time ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer grade) at Cane Hill Hospital, Coulsdon, Surrey, which has 4 outpatient clinics and undertakes postgraduate teaching in association with the Institute of Psychiatry. It is within easy reach of the London Teaching Centres and every facility is given to staff working for higher medical qualifications.

Applications (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 12th February, 1955. Applicants may visit Hospital by local arrangement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Part-time CONSULTANT PHYSICIAN (6 half-days per week) for the Worthing (Sussex) Group and Graylingwell Hospital, Chichester.

Applications (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 19th February, 1955. Applicants may visit hospitals by local arrangement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Part-time CONSULTANT OPHTHALMOLOGIST (2 half-days per week) for the Farnham (Surrey) Group of hospitals. Duties mainly at Aldershot Hospital. Successful candidate will be required to live within easy access of Aldershot area.

Applications (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 19th February, 1955. Applicants may visit Hospital by local arrangement.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) Maximum Part-time CONSULTANT GROUP ANÆSTHETIST to organise and coördinate services in North and Mid-Cheshire Hospitals, based on Altrincham General Hospital, near Manchester, and to reside in vicinity of that Hospital. Wide experience and higher qualifications essential. 14th February, 1955.

(*b*) Whole-time NON-RESIDENT ASSISTANT CHEST PHYSICIAN (Senior Hospital Medical Officer), Baguley Hospital, Manchester (400 Beds). This is the main regional centre for the surgical treatment of pulmonary tuberculosis and previous experience in the management of such cases will be an asset. Further information from Physician-Superintendent. 9th February, 1955.

(*c*) 2 Whole-time NON-RESIDENT SENIOR CASUALTY OFFICERS :

(i) Burnley and District Hospitals, main duties at the Victoria Hospital, Burnley.

(ii) Stockport and Buxton Hospitals, mainly at Stockport Infirmary.

Special experience required in the treatment of orthopædic cases, fractures and trauma. Appointees will assist the Consultant Orthopædic Surgeons and also have special responsibilities in the Casualty and Traumatic (including fracture) Clinics, subject to general supervision of the Consultants. Salary within range £1500–£250–£1950 (according to experience, &c.). A higher qualification desirable. Tenure of posts limited to 4 years. 7th February, 1955.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by dates stated.

NEWCASTLE REGIONAL HOSPITAL BOARD.

Gateshead Tuberculosis Administrative Area (population 200,000), including 70 Beds under direct charge of the 2 Chest Physicians and the Assistant Chest Physician

CONSULTANT CHEST PHYSICIAN, whole-time, or part-time for a minimum of 9 notional half-days per week.

South Shields Hospital Management Committee (population 158,309) (main hospitals : Ingham Infirmary—158 Beds ; General Hospital—602 Beds)

CONSULTANT ANÆSTHETIST, whole-time, or part-time for a minimum of 9 notional half-days per week.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 28 days.

Hospital Services : Junior Appointments

BROMPTON HOSPITAL, S.W.3. Applications invited for post of MEDICAL REGISTRAR (whole-time). Salary within the Registrar grade. The appointment is for 1 year, commencing 1st March, 1955, or earlier, with eligibility for reappointment. Candidates must hold the M.R.C.P. Diploma or the M.B. of a university.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 5th February, to KENNETH A. F. MILES, House Governor.

BROMPTON HOSPITAL, S.W.3. Applications invited for post of NON-RESIDENT HOUSE PHYSICIAN, for which there are 3 vacancies, for 6 months from 1st April. Duties include work in Outpatient Department and wards. Salary £475 or £525 a year, according to experience.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 5th February, to KENNETH A. F. MILES, House Governor.

BROMPTON HOSPITAL SANATORIUM, Frimley. Applications invited for post of RESIDENT MEDICAL OFFICER, for 6 months commencing 1st April, with eligibility for reappointment. Salary within the Registrar grade. Previous experience of chest work desirable.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 5th February, to KENNETH A. F. MILES, House Governor.

Brompton Hospital, S.W.3.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER required in Surgical Department. Appointment for 6 months from 1st March. 1955.

Applications, with copies of 2 testimonials, to Medical Director by 29th January, 1955.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER required in General Surgical and Urological Department. Pre-registration appointment, for 6 months from 1st March, 1955.

Applications, with a copy each of 2 testimonials, to Medical Director by 29th January, 1955.

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. (General—310 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (pathology), resident or non-resident, for area laboratory at this Hospital. The successful candidate will be required when necessary to work in other hospitals in the Group under the supervision of the Area Pathologist.

Applications, stating age, nationality, experience and qualifications, with copies of 3 recent testimonials, to the Hospital Secretary, by 29th January, 1955.

DULWICH HOSPITAL, East Dulwich-grove, S.E.22 (in association with Kings' College Hospital Medical School for teaching purposes). Applications invited for appointment as HOUSE OFFICER (general surgical duties) at above Hospital. Recognised pre-registration post, vacant from 16th February, 1955.

Applications, giving age, qualifications, &c., with copy testimonials or names of 2 referees, to Group Secretary, Camberwell Hospital Management Committee, Dulwich Hospital.

GUY'S HOSPITAL, S.E.1. Applications are invited for the appointment of REGISTRAR (whole-time) to the Radiotherapy Department. D.M.R. preferred but not essential. Duties to commence as soon as possible.

Forms of application, obtainable from the Superintendent, Guy's Hospital, should be forwarded not later than 5th February, 1955.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. RESIDENT HOUSE SURGEON (radiotherapy) required 1st March. This post offers opportunities for attending the general surgical postgraduate teaching.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary, Board of Governors, by 29th January.

KING EDWARD MEMORIAL HOSPITAL, Ealing, W.13. SOUTH WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. Locum Tenens HOUSE SURGEON required from early February, 1955. Post is recognised as Pre-registration Service, but registered practitioners will be considered.

Apply Hospital Secretary.

KING EDWARD MEMORIAL HOSPITAL, Ealing, W.13. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR (whole-time), resident, required 20th April, 1955. Staff includes Registrar and Senior House Officer Anæsthetists. Post recognised for D.A. and F.F.A.R.C.S. examinations. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, West Middlesex Hospital, Isleworth, by 1st February, 1955.

KING'S COLLEGE HOSPITAL, Denmark-hill, S.E.5. Applications are invited for the post of Full-time PÆDIATRIC REGISTRAR in the King's College Hospital Group, which includes the Belgrave Hospital for Children. The post will be in the grade of Registrar or Senior Registrar, according to the experience and qualifications of the successful candidate.

Applications, stating age, education, qualifications and experience, together with the names of 3 referees, should be addressed to the undersigned, from whom further particulars may be obtained, by 5th February, 1955.

S. W. BARNES, House Governor.

KING'S COLLEGE HOSPITAL, Denmark-hill, S.E.5. Applications are invited for the post of SENIOR REGISTRAR in Ophthalmology at the Royal Eye Hospital. Applicants should hold a higher surgical qualification and have had previous experience in an ophthalmic post. The appointment, which is subject to the terms and conditions of service for medical and dental staffs, will be tenable until 30th September, 1955, in the first instance, and is subject to reappointment.

Applications, stating age, education, qualifications and experience, with the names of 2 referees, should be sent to the undersigned as soon as possible.

S. W. BARNES, House Governor.

LAMBETH HOSPITAL, Kennington, S.E.11. Applications are invited from pre-registration, and registered medical practitioners for posts of HOUSE SURGEON (2), vacant on 8th and 11th February, 1955. The appointments are for 6 months. Recognised for the F.R.C.S.

Application forms from the Physician-Superintendent enclosing a stamped addressed envelope.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. 2 vacancies occur 1st April, 1955, for RESIDENT HOUSE PHYSICIAN. Appointments for 6 months, 4 in London, 2 at the Country Branch, near Letchworth, and posts are graded as House Officer. Duties include work in the Outpatient Department and Refill Clinic as well as in wards.

Applications, stating age, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned not later than 19th February.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

NEW END HOSPITAL, N.W.3. (240 Beds with new Endocrine Unit, including thyroid surgery.) ANÆSTHETIC REGISTRAR to Archway Group. Post recognised for D.A. and F.F.A. R.C.S. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to Group Secretary, Archway Group Hospital Management Committee, 46, Cholmeley-park, N.6, by 31st January.

PADDINGTON GENERAL HOSPITAL, Harrow-road, W.9. (564 Beds.) Applications are invited for the post of REGISTRAR (obstetrics and gynæcology), whole-time, resident post, recognised for M.R.C.O.G., commencing 1st April, 1955. Department contains 93 obstetric and 38 gynæcological beds. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, the Secretary to Committee, Paddington General Hospital, Harrow-road, W.9, by 10th February, 1955.

MILE END HOSPITAL, Bancroft-road, E.1. (475 Beds.) HOUSE SURGEON (pre-registration, or first, second, or third). Required for duty on 8th March, 1955.

Application forms obtainable from Physician-Superintendent, to be returned by 4th February, 1955, with copies of not more than 3 testimonials.

MILE END HOSPITAL, Bancroft-road, E.1. House OFFICER (second or third post—obstetrics). Post recognised in Obstetrics for M.R.C.O.G., required for 6 months commencing 1st March, 1955.

Application forms, which may be obtained from Physician-Superintendent, to be returned by 4th February, 1955.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of ASSISTANT REGISTRAR (whole-time) to the Outpatients' Department at The National Hospital, Queen-square, W.C.1. This post carries the grade of Senior Registrar. The appointment will be for 1 year in the first instance.

Applications, giving the names of 3 referees, to be sent to the undersigned not later than 2nd February, 1955.

H. EWART MITCHELL, Secretary.

The National Hospitals for Nervous Diseases,
Queen-square, W.C.1.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. (219 Beds.) TOTTENHAM GROUP HOSPITAL MANAGEMENT COMMITTEE (GROUP 4). Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER RESIDENT ANÆSTHETIST, for a period of 6 months, vacant middle March. Post recognised for F.F.A. R.C.S.

Application form from Secretary, to be returned by 7th February, 1955.

PUTNEY HOSPITAL, Lower Common, S.W.15. House SURGEON (resident), vacant 20th February. Open to registered practitioners and pre-registration candidates.

Apply Hospital Secretary, enclosing copies of 3 recent testimonials, by 3rd February.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN MANAGEMENT COMMITTEE, Hackney-road, E.2, Shadwell, E.1, and BANSTEAD WOOD, SURREY. Applications are invited for the appointment of RESIDENT MEDICAL OFFICER (Male or Female), graded Senior House Officer, at Hackney-road, E.2, to become vacant 1st April, 1955. Candidates must have had experience in the treatment of sick children. The appointment will be for 1 year.

Application forms may be obtained from the Secretary at Hackney-road, and should be returned, with copies of not more than 3 testimonials, not later than 31st January, 1955.

QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS. Locum Tenens SENIOR REGISTRAR required by the Board of Governors of Queen Charlotte's and Chelsea Hospitals to undertake duties at both hospitals for approximately 4 months from 1st February. Salary £24 per week.

Candidates should have the M.R.C.O.G. qualification and should apply, stating age, qualifications with dates, and previous appointments, together with the names of 2 referees, to the Secretary, 339, Goldhawk-road, London, W.6, not later than 31st January, 1955.

ROYAL LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street and Queen-square, W.C.1. Applications are invited from registered medical practitioners for the appointment of HOUSE PHYSICIAN, vacant 1st March, 1955. 6 months appointment. Salary on National Health Service scale. Candidates will be required to attend for interview.

Applications, stating age and full particulars, to Secretary.

ROYAL NATIONAL THROAT, NOSE AND EAR HOS-PITAL, Gray's Inn-road, W.C.1, and Golden-square, W.1, with which is associated the Institute of Laryngology and Otology (University of London). General Practitioner CLINICAL ASSISTANTS and OUTPATIENT ASSISTANTS. These appointments give those engaged in general practice who are able to attend for 2 sessions weekly commencing in March, 1955, the opportunity of widening their clinical experience in the specialty. Remuneration under paragraph 10(*b*) of the National Health Service terms and conditions of service at end of 3 months trainee period.

Further particulars may be obtained from the House Governor.

ROYAL NATIONAL THROAT, NOSE AND EAR HOS-PITAL AND INSTITUTE OF LARYNGOLOGY AND OTOLOGY, Gray's Inn-road, W.C.1, and Golden-square, W.1. Applications are invited for a post of SENIOR REGISTRAR with effect from 1st March, 1955. The appointment will be for an initial period of 1 year, subject to annual re-election thereafter up to the maximum permissible term in this grade and otherwise in accordance with the terms and conditions of service in the National Health Service. Applicants must have had considerable experience in general surgery and in this specialty and hold a higher surgical qualification.

Applications should give full information as to qualifications and experience, and the names of 2 referees, and should be sent, in duplicate, to the House Governor before 30th January.

SOUTH EAST METROPOLITAN REGIONAL HOS-PITAL BOARD. Applications are invited for a whole-time appointment as RESIDENT MEDICAL OFFICER to fill a vacancy in the approved establishment at the Seamen's Group of hospitals. The successful candidate will be required to reside at the Dreadnought Seamen's Hospital, Greenwich, S.E.10. The salary will be £965 p.a. and the appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance, renewable for a further year.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 5th February, 1955.

SOUTH EAST METROPOLITAN REGIONAL HOS-PITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Neurosurgery at the Regional Neurosurgical Unit at the Brook Hospital, Shooters Hill-road, Woolwich, S.E.18. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 3 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 5th February, 1955.

ST. ANDREW'S HOSPITAL, Bow, E.3. Bow Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for appointment as SENIOR HOUSE OFFICER ANÆSTHETIST.

Applications, stating age, qualifications, and experience, with copies of 3 testimonials, should be sent to the Group Secretary, Bow Group Hospital Management Committee, 2A, Bow-road, London, E.3.

ST. ANN'S GENERAL HOSPITAL, N.15. (756 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE PHYSICIAN (Senior House Officer) for duty in the Infectious Diseases Unit and other general duties, for a period of 6 months commencing 20th February, 1955.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, Tottenham, N.15.

ST. BARTHOLOMEW'S HOSPITAL, E.C.1. Applications are invited for the post of Whole-time REGISTRAR in the Orthopædic Department. The appointment will be for 1 year in the first place, with eligibility for re-election up to a maximum of 3 years.

Applications, giving the names of 3 referees, should be submitted to the undersigned on or before 31st January, 1955.

C. C. CARUS-WILSON, Clerk to the Governors.

ST. BARTHOLOMEW'S HOSPITAL, E.C.1. Applications are invited for the post of Whole-time Locum REGISTRAR in the Orthopædic Department, for a period of 2 months as from 7th February, 1955.

Applications should be submitted to the undersigned as soon as possible. C. C. CARUS-WILSON, Clerk to the Governors.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. Applications are invited for the post of SENIOR HOUSE OFFICER (E.N.T., plastic, orthopædic, ophthalmology, &c.), resident or non-resident.

Applications, stating age, qualifications, experience, together with names and addresses of 2 referees, to be forwarded to Hospital Secretary immediately.

ST. MARY'S HOSPITAL, W.2. Applications are invited from suitably qualified practitioners for the post of non-resident Whole-time REGISTRAR in General Medicine. The successful applicant will be required to undertake work in the Casualty and Outpatient Departments as well as having certain inpatient duties. The appointment will be for a first period of 12 months, as from a date to be arranged.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 10th February, 1955.

ST. MARY'S HOSPITAL CHILDREN'S DEPARTMENT, PRINCESS LOUISE (KENSINGTON) HOSPITAL FOR CHILDREN, St. Quintin-avenue, London, W.10. HOUSE OFFICERS (2) required (second or third post). Pre-registration candidates considered. Vacant 1st March, 1955, as follows :—

(*a*) Medical and surgical beds.
(*b*) E.N.T. beds and casualty.

Recognised for the D.C.H.

Applications, with 3 testimonials, to undersigned not later than 28th January, 1955. A. C. YOUNG, Secretary.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, Upper-road, Plaistow, London, E.13. RESIDENT SENIOR HOUSE OFFICER (general medicine) required for a period of 12 months commencing mid-February, 1955.

Apply to Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, naming 3 referees, by 5th February, 1955.

ST. NICHOLAS HOSPITAL, Tewson-road, Plumstead, S.E.18. SENIOR HOUSE OFFICER (general surgery and orthopædics), vacant 14th February. Recognised for F.R.C.S. 6 months appointment and may then be renewed. Salary £745 p.a., less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. STEPHEN'S HOSPITAL, Fulham-road, S.W.10. SENIOR HOUSE PHYSICIAN (Senior House Officer), General Medicine. Some teaching. Vacancy early March.

Applications, naming 2 personal referees, to the Medical Superintendent.

ST. THOMAS'S HOSPITAL, London, S.E.1. Resident REGISTRAR to the Department of Obstetrics and Gynæcology for 1 year in the first instance.

Applications, including names and addresses of 2 referees, to the Clerk of the Governors, by 31st January, 1955.

THORPE COOMBE MATERNITY HOSPITAL, Wal-thamstow, E.17. (54 Beds.) Applications are invited from medical Women for the post of JUNIOR OBSTETRIC OFFICER (graded House Officer), vacant 28th February, 1955. The Hospital is recognised by the Royal College of Obstetricians and Gynæcologists.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to the Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

WANSTEAD HOSPITAL, Harmon-hill, Wanstead, E.11. (191 Beds.) Applications are invited for the post of HOUSE PHYSICIAN, vacant 23rd February, 1955.

Applications, with full details and copies of 2 recent testimonials, to be sent immediately to the Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. Applications invited for post of REGISTRAR to Department of Clinical Pathology for 1 year in first instance, from 21st February, 1955.

Applications (4 copies), with names of 2 referees, to House Governor by 31st January.

WESTMINSTER HOSPITAL TEACHING GROUP. The GORDON HOSPITAL FOR RECTAL, COLONIC AND GASTRO-INTESTINAL DISEASES. Applications are invited for the post of SURGICAL SENIOR REGISTRAR at the Gordon Hospital, for 1 year in the first instance, for duty as soon as possible. Candidates must hold the F.R.C.S.

Applications (12 copies), together with the names of 2 referees, should reach the Secretary, The Gordon Hospital, Vauxhall Bridge-road, S.W.1. by 25th January, 1955.

WHIPPS CROSS HOSPITAL, E.11. Leytonstone (No. 10) HOSPITAL GROUP. Applications are invited for the following posts at Whipps Cross Hospital (924 Beds) :—

HOUSE SURGEON (pre-registration) in the Orthopædic Department, which falls vacant on 26th January, 1955.

HOUSE SURGEON in the Orthopædic Department, which falls vacant on 10th March, 1955. This post is recognised for the F.R.C.S. examination.

Application forms from the Hospital Secretary, Whipps Cross Hospital, London, E.11. to be returned within 14 days of the appearance of this advertisement.

ABERDARE GENERAL HOSPITAL, Aberdare. (102 Beds.) MERTHYR AND ABERDARE HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER. Vacancy 1st February, 1955. Duties include those in general surgery, general medicine, gynæcology, obstetrics, and pædiatrics. Salary £745 p.a., less emoluments.

Applications, stating age, qualifications, &c., together with copies of 2 recent testimonials, to Group Secretary, Merthyr and Aberdare Hospital Management Committee, St. Tydfil's Hospital, Merthyr Tydfil.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGE-MENT COMMITTEE. E.N.T. SURGEON (Senior House Officer grade) required for duty at Ashton-under-Lyne General Hospital.

Applications, stating age, nationality, qualifications and experience with copies of 3 testimonials, to be forwarded to the Group Secretary, General Hospital, Ashton-under-Lyne, Lancs, as soon as possible.

BARROW-IN-FURNESS. NORTH LONSDALE HOS-PITAL. BARROW AND FURNESS HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for a resident post of HOUSE SURGEON (recognised for pre-registration and F.R.C.S.) at the North Lonsdale Hospital, Barrow-in-Furness, with surgical work under control of Consultant Surgeons.

Applications to Group Secretary, 52, Paradise-street, Barrow-in-Furness.

BATH CLINICAL AREA. The Board of Governors of the UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of REGISTRAR in E.N.T. Surgery. This post becomes vacant on 1st April, 1955. The appointment will be held for 1 year in the first instance, and be renewable for a further year. The successful candidate will be appointed to work for the first year in the Bath Group of hospitals. The appointment is recognised as satisfying requirements for the examination for the F.R.C.S. England with Otolaryngology as a special subject, and the Diploma in Laryngology and Otology.

Applications, stating date of birth, qualifications and experience together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 5th February, 1955.

BEDFORD GENERAL HOSPITAL. North West Metro-POLITAN REGIONAL HOSPITAL BOARD. RESIDENT REGISTRAR (obstetrics and gynæcology) required at the above Hospital. Maternity Unit 61 Beds ; Gynæcological Unit 26 Beds. Hospital may be visited by direct appointment. Post vacant 3rd March, 1955.

Application form obtainable from, and returnable to, Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford, by 5th February, 1955.

BEDFORD GENERAL HOSPITAL. (437 Beds.) North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR required for busy acute Orthopædic and Traumatic Department at the above Hospital. Previous orthopædic experience desirable. Candidates may visit Hospital by appointment with the Group Secretary. Post vacant end of March.

Application form obtainable from, and returnable to, Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford, by 5th February, 1955.

BLACKPOOL. VICTORIA HOSPITAL. (344 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (Department of Thoracic Surgery). Main duties at the Victoria Hospital, Blackpool. Post offers excellent opportunities for gaining experience under a Consultant Thoracic Surgeon.

Applications, with references or names and addresses of referees, should be sent to the Hospital Secretary.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street, BIRMINGHAM, 3. Required, SENIOR HOUSE OFFICER or HOUSE OFFICER (including pre-registration), according to experience.

Detailed applications, with copies of 2 recent testimonials, to the Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM ACCIDENT HOSPITAL, Birmingham, 15. (215 Beds.) RESIDENT HOUSE SURGEON, vacant February. Recognised by Royal College of Surgeons for Fellowship examinations. Appointments for period of 6 months in General Accident Service and may (at applicant's request) include a period in 32-bedded Burns Unit.

Apply Administrator.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. THE CHILDREN'S HOSPITAL. Applications are invited for the appointment of SURGICAL REGISTRAR (non-resident) in the grade of Registrar, vacant 1st April, 1955. Preference will be given to candidates holding a higher qualification. Residence in the Hospital will be required when the Resident Surgical Officer is absent.

Forms of application may be obtained from the House Governor, The Children's Hospital, Ladywood-road, Birmingham, 16, and should be returned not later than 13th February, 1955. G. A. PHALP, Secretary to the Board of Governors.

BRADFORD ROYAL INFIRMARY. Senior House Surgeon (Thoracic Unit), vacant 1st March, 1955. Salary £745 p.a., less £150 p.a. residential emoluments.

Applications, stating age, experience, nationality and qualifications, with copy testimonials, to Secretary.

BRADFORD. ST. LUKE'S HOSPITAL. Senior House OFFICER (anæsthetics), vacant 1st March, 1955. Salary £745 p.a., less £150 p.a. residential emoluments. Opportunities for plastic and intra-thoracic experience and recognised for D.A. and F.F.A.R.C.S.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE GROUP OF HOSPITALS. HOUSE SURGEON required in the E.N.T. Department of the above Group, vacant in March. Recognised for F.R.C.S. and D.L.O.

Applications, with details of experience, age, and qualifications, and naming 2 referees, to be sent to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRISTOL CLINICAL AREA. The Board of Governors OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of REGISTRAR in Anæsthetics. The appointment will be held for 1 year in the first instance, and be renewable for a further year. The successful candidate will be appointed to work for the first year mainly at Southmead Hospital, Bristol, but may also be required to undertake duties at other hospitals in the Group.

Applications, stating date of birth, qualifications and experience together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 5th February, 1955.

BRISTOL CLINICAL AREA. The Board of Governors of THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of Temporary SENIOR REGISTRAR in Anæsthetics. The appointment will be for 1 year from 1st May, 1955. The successful candidate will be appointed to work mainly at Frenchay Hospital, Bristol, which is the Regional Centre for neuro, plastic and thoracic surgery and has a General Surgical Unit, and to visit other hospitals in the Clinical Area as may be determined by the Regional Board from time to time.

Applications, stating date of birth, qualifications and experience together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 5th February 1955.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MAN-AGEMENT COMMITTEE. SENIOR HOUSE OFFICER required in the Thoracic Surgery Department which is the Regional Thoracic Surgery Centre (120 Beds) for the South West.

Applications, with full particulars, should be addressed to the Group Secretary, Frenchay Hospital, Bristol, quoting "Thoracic."

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. FRENCHAY HOSPITAL. (513 staffed beds, expanding.) Applications are invited for the post of SENIOR HOUSE OFFICER in the Regional Neurosurgery Department. Vacant shortly. This post offers useful surgical experience and the opportunity of gaining a working knowledge of neurological diagnosis.

Applications, quoting 2 referees, to the Secretary, Frenchay Hospital, quoting N.S.F.

BRISTOL (near). BARROW HOSPITAL, Barrow GURNEY. BRISTOL MENTAL HOSPITAL MANAGEMENT COMMITTEE. Applications invited from registered medical practitioners for appointment of SENIOR HOUSE OFFICER. Experience in general medicine or neurology an advantage. The Group includes Modern Admission Units, Neurosis Centre, and Day Hospital, with Departments of Applied Psychology, Electro-encephalography, and Biochemical Research. The appointment offers opportunities for experience in many aspects of acute and chronic psychiatric illness.

Applications, giving details of experience, and names of 3 referees, should be made to Medical Superintendent, Barrow Hospital, Barrow Gurney, near Bristol, within 2 weeks of appearance of this advertisement.

BRISTOL (near). HAM GREEN HOSPITAL, Pill, near BRISTOL. Applications are invited for the post of HOUSE OFFICER in the tuberculosis wards (188 Beds) of the above Hospital. The Hospital is fully equipped for the modern treatment of pulmonary tuberculosis, including regular major thoracic surgery.

Apply Secretary, Ham Green Hospital, Pill, near Bristol.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL. SENIOR HOUSE OFFICER (surgical), resident or non-resident, at the above Hospital. Salary and conditions of service in accordance with national rules.

Applications should be made to—

H. WILKINSON, Esq., Group Secretary.

Bury General Hospital, Bury, Lancs.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. FAIRFIELD GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER in Obstetrics and Gynæcology at Fairfield General Hospital.

Apply, stating age, qualifications, experience, and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in Pædiatrics. The post is based on Bury General Hospital, but will include duties at other hospitals in the Group.

Apply, stating age, qualifications, experience, and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. Senior REGISTRAR (radiology) required as soon as possible.

Apply, with full particulars and names of 3 referees, to Secretary by 5th February.

CARDIFF. THE UNITED CARDIFF HOSPITALS. The Board of Governors invites applications for the appointment of REGISTRAR in Surgery at Llandough Hospital.

Application forms can be obtained from the Secretary, United Cardiff Hospitals, Cardiff Royal Infirmary.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. Applications are invited for post of CASUALTY OFFICER (Senior House Officer), vacant early February.

Applications, stating age, qualifications and experience, with copies of recent testimonials and the names of 2 referees, should be sent to the Group Secretary at above address.

CHELMSFORD AND ESSEX HOSPITAL. (163 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON (pre-registration post). Post vacant now and offers good surgical experience and is recognised for the F.R.C.S.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHEPSTOW. CHEST UNIT, MOUNT PLEASANT HOSPITAL. (150 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER required (resident, or non-resident locally). Medical and surgical duties are included. A new Thoracic Surgery Unit is now opening. Senior Hospital Medical Officer also resident.

Write, quoting 2 referees, to—

T. A. JONES, Group Secretary.

64, Cardiff-road, Newport, Mon.

CHEPSTOW, MONMOUTHSHIRE. ST. LAWRENCE HOSPITAL. (100 plastic surgery, 50 orthopædic beds.) PLASTIC SURGERY, JAW INJURIES AND BURNS CENTRE. SENIOR HOUSE OFFICER in Plastic Surgery required. Previous experience in specialty not essential. The successful candidate will receive a thorough training in plastic surgery and burns. Hospital intakes from most of Wales and provides extensive experience. There is another Senior House Officer in Plastic Surgery, and also a Senior House Officer in Orthopædics. Salary £745, less £150 board-residence.

Write, quoting 2 referees, to T. A. JONES, Group Secretary.

64, Cardiff-road, Newport, Mon.

CHESTERFIELD ROYAL HOSPITAL. (324 Beds.) 2 HOUSE SURGEONS required. Posts recognised for Pre-registration Service and F.R.C.S. training.

CASUALTY OFFICER required. Recognised for pre-registration purposes.

For interview please apply M. H. BOONE, Secretary, Chesterfield Hospital Management Committee.

CLACTON AND DISTRICT HOSPITAL, Clacton-on-Sea. (58 Beds.) Applications invited for post of SENIOR HOUSE OFFICER (Resident Surgical Officer). Post tenable for 1 year.

Applications, with copies of 3 testimonials, to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

DERBY. DERBYSHIRE ROYAL INFIRMARY. House PHYSICIAN (pre-registration), vacant 12th February, 1955.

Apply, stating full details with copies of 2 recent testimonials, to Hospital Secretary.

DERBY. DERBYSHIRE ROYAL INFIRMARY. Resident SENIOR HOUSE OFFICER (Orthopædic and Accident Service), vacant immediately. Recognised for F.R.C.S.

Apply, stating full details with copies of 2 recent testimonials, to Hospital Secretary.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) Applications are invited for the appointment of SENIOR HOUSE OFFICER in Geriatrics. This is a newly created post. The duties will involve the medical treatment and rehabilitation of elderly sick in a new and developing department of the Hospital. There will be facilities for postgraduate study.

Applications, stating age, qualifications, experience, and the names of 2 referees, to Group Secretary by 5th February, 1955.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) 2 RESIDENT OBSTETRIC HOUSE SURGEONS for above Hospital. Posts vacant 2nd and 14th March, 1955. 6 months appointments. Posts recognised for M.R.C.O.G. purposes.

Applications, stating age, qualifications, experience and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 5th February, 1955.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. RESIDENT HOUSE SURGEON required for the Genito-urinary and General Surgical Departments at above Hospital. Post now vacant and recognised for F.R.C.S. and pre-registration purposes. 6 months appointment.

Applications, stating age, qualifications, experience and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 29th January, 1955.

EPSOM, SURREY. LONG GROVE HOSPITAL (for mental and nervous disorders). (2300 Beds.) SOUTH WEST METROPOLITAN REGION. Applications are invited for an appointment as Whole-time PSYCHIATRIC REGISTRAR. The Hospital affords opportunities for experience of all modern methods of investigation and treatment. There is an extensive outpatients service and facilities are given to study for the D.P.M. (The Hospital is approved for the Conjoint D.P.M.)

Forms of application may be obtained from the Secretary and should be returned to him not later than 2 weeks after the appearance of this advertisement. Candidates will be welcome to visit the Hospital by appointment with the Physician-Superintendent.

EXETER CLINICAL AREA. The Board of Governors of THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of REGISTRAR in Orthopædic and Traumatic Surgery. The appointment will be held for 1 year in the first instance, and be renewable for a further year. The successful candidate will be appointed to work for the first year at the Princess Elizabeth Orthopædic Hospital, Exeter.

Applications, stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 7th February, 1955.

FARNBOROUGH HOSPITAL, Farnborough, Kent. (800 Beds.) HOUSE SURGEON required for 6 months from 1st March, 1955. Recognised for the F.R.C.S. Preference given to pre-registration candidates.

Apply, stating age, qualifications with dates, and experience, and naming 3 referees, to the Administrative Officer by 29th January, 1955.

GLASGOW ROYAL INFIRMARY. Junior Hospital MEDICAL OFFICER in Radiotherapy. Duties at above Infirmary.

Write not later than 5th February, 1955, giving 3 names for reference, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

GODALMING, SURREY. MILFORD CHEST HOS-PITAL. (348 Beds.) MEDICAL REGISTRAR required. All modern forms of treatment, including major thoracic surgery, are carried out, a proportion of the beds being set aside for non-tuberculous thoracic surgery.

Application forms from the Group Secretary, Group Office, King George V Hospital, Godalming, to whom they should be returned not later than 4th February, 1955.

GRANTHAM AND KESTEVEN GENERAL HOSPITAL. (117 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 31st January, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

GRIMSBY GENERAL HOSPITAL. (238 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR (pre-registration) or SENIOR HOUSE OFFICER (surgical), vacant from 26th January, 1955.

Applications, with names of 2 referees, to Hospital Secretary, Grimsby General Hospital.

GRIMSBY GENERAL HOSPITAL. (238 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN (Pre-registration or Senior House Officer grade). The Hospital has a well-equipped medical library and reading room.

Applications, together with the names of 2 referees, to be sent to the Hospital Secretary, Grimsby General Hospital, Grimsby.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (232 Beds.) HOUSE SURGEON to Orthopædic and Traumatic Unit. The post is tenable for 6 months from 1st March, is recognised for the F.R.C.S. examination, and is open to pre-registration candidates.

Applications, with copies of 3 testimonials, should be sent to the Hospital Secretary as soon as possible.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. HOUSE SURGEON (pre-registration).

Applications, mentioning 2 names for reference, should be sent to the Hospital Secretary at once.

HERTFORD COUNTY HOSPITAL. (Situated 21 miles from London.) Applications are invited from registered medical practitioners for the appointment of a Whole-time Locum REGISTRAR (surgical), to commence as soon as possible. Salary £17 10s. per week.

Applications, giving full details, together with copies of recent testimonials or the names of referees, to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for appointment of HOUSE SURGEON (general, gynæcology and obstetrics—first or second post). Recognised under F.R.C.S. regulations, pre-registration post. Duties to commence 7th February, 1955.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) SENIOR HOUSE OFFICER (casualty and orthopædic), post vacant 26th January, 1955. National scale of salary.

Apply to Hospital Administrator.

HILLINGDON HOSPITAL, near Uxbridge, Middlesex. (General—705 Beds.) PÆDIATRIC HOUSE PHYSICIAN (resident) required. Duties include experience in General Children's Medical Ward, Neonatal Unit and Pædiatric Outpatient Clinics. Appointment recognised for D.C.H. Applications accepted from registered and pre-registration practitioners.

Apply, stating age, qualifications, nationality and experience, with copies of not more than 3 recent testimonials, to Medical Director by 31st January.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from provisionally registered or registered medical practitioners for the post of HOUSE PHYSICIAN, to commence duties on 1st March, 1955. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.

The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE HOUSE SURGEON required to commence duty on 1st February, 1955. The post is recognised as a pre-registration appointment. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.

The Royal Infirmary, Huddersfield.

HULL. KINGSTON GENERAL HOSPITAL. (444 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE PHYSICIAN (recognised pre-registration appointment). Salary £425, £475, or £525 according to experience. The post is resident and tenable for 6 months. Vacant 1st March, 1955.

Applications, with full particulars, to the Hospital Secretary.

ILFORD. KING GEORGE HOSPITAL. There will be a vacancy for a SENIOR HOUSE OFFICER ANÆSTHETIST at the above Hospital on 12th February, 1955. The Officer appointed will be required to be available for duty in other hospitals in the Group. Salary will be at the rate of £745 p.a., less £145 p.a. emoluments.

Applicants should have been registered not less than 1 year and should send applications, accompanied by copies of 3 testimonials, to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Secretary,
Ilford and Barking Group Hospital Management Committee.
King George Hospital, Ilford.

IPSWICH. BOROUGH GENERAL HOSPITAL, Heath-road, IPSWICH. (270 Beds.) Applications are invited for the post of HOUSE SURGEON (obstetric and gynæcology), which becomes vacant on 28th February, 1955. Recognised for the D.Obst.R.C.O.G.

Applications, giving details of qualifications, age, nationality and experience, together with copies of 2 recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department. Approved pre-registration post.

Applications, with copies of recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the E.N.T. and Ophthalmic Departments. The post is recognised for pre-registration and for the D.L.O. examination.

Applications, giving full particulars and copies of recent testimonials, to the Hospital Secretary.

ISLE OF THANET HOSPITAL MANAGEMENT COMMITTEE.

General Hospital, Ramsgate (101 Beds)
HOUSE SURGEON.
General Hospital, Margate (132 Beds)
HOUSE SURGEON.

Approved pre-registration posts. Salary at the rate of £425–£525 p.a., according to experience, less £125 for residential emoluments.

Applications, with copies of testimonials, to Hospital Secretary of appropriate hospital.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (Tuberculosis Unit of 90 Beds, large general hospital).

Applications, stating age, nationality, qualifications and experience, with copies of up to 3 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, by 1st February, 1955.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds.) Applications are invited for HOUSE OFFICER (anæsthetics). The post is recognised for D.A.

Applications to Hospital Secretary.

LANCASTER MOOR HOSPITAL, Lancaster. (Regional MENTAL HOSPITAL.) Applications invited for post of RESIDENT or NON-RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER (Male or Female) on a tenure of 4 years: preference to candidates who have held house appointments at general hospitals. Previous experience in psychiatry not essential. Unfurnished flat in Hospital grounds for married applicants if required; furnished quarters for single persons. Modern methods of investigation and treatment carried out. Outpatient clinics (3) at hospitals in the area, staffed from Hospital.

Applications, stating age, qualifications and experience, and names of 2 referees, to be sent to the Medical Superintendent.

LANCASTER MOOR HOSPITAL, Lancaster. (Regional MENTAL HOSPITAL.) Locum JUNIOR HOSPITAL MEDICAL OFFICER (Male or Female) required immediately. Salary £17 10s. per week, less charges for residential accommodation, &c.

Apply Medical Superintendent.

LEEDS, 2. PUBLIC DISPENSARY AND HOSPITAL. LEEDS A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER (Senior House Officer) at the above Hospital. The appointment will be for a period of 1 year. Salary in accordance with the agreed terms and conditions of service of hospital medical and dental staffs, with an appropriate deduction in respect of board, lodging, &c.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.
Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following REGISTRAR posts:—

Anæsthetics

St. Luke's Hospital, Bradford, and other hospitals in the Bradford A Group (resident).

Dermatology

Duties mainly at the Bradford Royal Infirmary (40 dermatological beds). Large Outpatient Department—5000 new cases annually (resident).

Ophthalmology

(*a*) Huddersfield (22 eye beds—1800 new outpatients annually) (non-resident).

(*b*) Halifax and Bradford A Hospital Management Committee Groups. Duties divided equally between Halifax Group (11 eye beds—1800 new outpatients annually) and Bradford A (34 eye beds—5800 new outpatients annually).

Orthopædic Surgery

(*a*) Royal Bath Hospital, Harrogate (40 orthopædic beds). Duties in connection with the Regional Rheumatism Scheme (resident).

(*b*) Duties mainly at Pinderfields General Hospital, Wakefield (70 short-stay and 160 long-stay orthopædic beds) and at other hospitals in the Wakefield A and B Groups (resident).

Psychiatry

Meanwood Park (Mental Deficiency) Hospital, Leeds (700 Beds). Accommodation available for a single person. (Facilities for attendance at the Leeds University will be provided if the successful candidate is studying for the D.P.M.)

Applications, stating age, qualifications, and details of appointments held showing dates, with names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Parkparade, Harrogate, not later than 27th January, 1955.

LEEDS, 9. ST. JAMES'S HOSPITAL. Leeds A Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male and Female) for the appointment of SENIOR HOUSE OFFICER (orthopædics). The appointment will be for a period of 1 year and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £745 p.a., with an appropriate deduction in respect of board, lodgings, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.
Administrative Offices, St. James's Hospital, Leeds 9.

LEEDS. THE UNITED LEEDS HOSPITALS. General INFIRMARY AT LEEDS. RESIDENT ORTHOPÆDIC OFFICER (Senior House Officer status) required. The post will be for an initial period of 6 months, renewable for a further 6 months thereafter.

Applications, stating age, qualifications and previous posts with dates, with the names of 3 referees, should reach the Secretary to the Board not later than 29th January, 1955.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. REGISTRAR in Psychiatry required. Non-resident post with opportunities for further training in psychiatry. Work is carried out in conjunction with the Leeds University Department of Psychiatry.

Applications, stating age, qualifications and present and previous appointments with dates, with the names of 3 referees, should be sent to the Sub-Dean, School of Medicine, Leeds, 2, not later than 5th February, 1955.

LEEDS. UNITED LEEDS HOSPITALS. The General INFIRMARY AT LEEDS. RESIDENT MEDICAL OFFICER required at the Ida and Robert Arthington Hospital, Cookridge, Leeds. The Hospital is used as a pre-convalescent annexe to the Teaching Hospital and the holder of the post will also be required, on occasions, to deputise for the Resident Medical Officer at the General Infirmary at Leeds. The post is of Senior House Officer status and the salary is £745 p.a.

Applications, giving age, qualifications, posts held with dates, and 3 names for reference, should be sent to the Secretary to the Board as soon as possible.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. ROYAL LIVERPOOL CHILDREN'S HOSPITAL. Applications are invited for a post of SENIOR CASUALTY OFFICER (resident or non-resident). Senior House Officer grade, for the period from 1st April to 31st December, 1955.

Apply by 5th February, 1955, on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. LIVERPOOL ROYAL INFIRMARY. Applications are invited for a post of SENIOR HOUSE OFFICER in Orthopædics for the period to 31st December, 1955.

Apply by 5th February, 1955, on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL, 15. BROADGREEN HOSPITAL. Applications are invited for the post of ADMISSION-ROOM AND CASUALTY OFFICER, tenable for a period 6 months from 1st March, 1955. The grading of the post will be either Senior House Officer or House Officer according to the experience and qualifications of the applicant appointed. The post is recognised for pre-registration purposes and is non-resident. Salary will be : Senior House Officer grade £745 p.a. ; House Officer grade £425–£475–£525 p.a. according to experience.

Applications, on forms obtainable from the undersigned, should be returned completed within 10 days of this advertisement. H. BLYTHE, Group Secretary.

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedfordshire. Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer), now vacant. Post offers varied experience and is recognised for the D.A. examination.

Applications, stating age, nationality, qualifications, and experience, together with copies of 3 recent testimonials, to be sent to the Secretary immediately.

MACCLESFIELD. PARKSIDE MENTAL HOSPITAL. (1650 Beds.) Applications are invited from suitably qualified medical practitioners for the whole-time post of JUNIOR HOSPITAL MEDICAL OFFICER (psychiatric). Terms and conditions of service of hospital medical and dental staffs only. Accommodation available for a single person. The appointment in the first place will be for a period of 4 years but reapplication may be made by the successful applicant at the end of this period. Preference will be given to candidates having previous general hospital experience. All modern methods of investigation and treatment are carried out, facilities for attending the course for the D.P.M. at Manchester University will be granted and the Hospital is recognised by the Conjoint Board for the purposes of the D.P.M.

Applications, giving age, nationality and full details, with the names of 3 referees, to be sent to the Medical Superintendent as soon as possible.

MACCLESFIELD HOSPITAL. Infirmary Branch. HOUSE OFFICER in Surgery. Pre-registration post. Acute Surgical Unit of 100 Beds. Recognised for F.R.C.S. purposes. Main casualty duties undertaken by Senior Resident Practitioner.

Apply immediately to Secretary, Macclesfield and District Hospital Management Committee, "Willerby House," Cumberland-street, Macclesfield.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for a post of SURGICAL REGISTRAR (resident of non-resident) at the North Lonsdale Hospital, Barrow-in-Furness. Post recognised for F.R.C.S.

Applications to Group Secretary, Barrow and Furness Hospital Management Committee, 52, Paradise-street, Barrow-in-Furness, not later than 5th February, 1955.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of REGISTRAR in Pathology in the Wigan and Leigh Hospital Management Committee Group Laboratory established at the Royal Albert Edward Infirmary, Wigan. Post vacant 1st March, 1955. The Laboratory is well equipped and recognised for the D.Path. There are excellent opportunities for gaining extensive experience in all branches of pathology.

Applications, with full particulars, and names of 2 referees, to Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan-lane, Wigan.

MANCHESTER REGIONAL HOSPITAL BOARD. Bury AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of REGISTRAR in Orthopædics, based at Bury General Hospital.

Apply, stating age, qualifications, experience, and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD. Bury AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of REGISTRAR in Obstetrics and Gynæcology at Fairfield General Hospital. The post is resident and a house is available in the Hospital grounds.

Apply, stating age, qualifications, experience, and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

MANCHESTER. ROYAL MANCHESTER CHILDREN'S HOSPITAL, PENDLEBURY. MANCHESTER REGIONAL HOSPITAL BOARD. SALFORD HOSPITAL MANAGEMENT COMMITTEE. Applications invited for RESIDENT MEDICAL OFFICER (Registrar grade), vacant 18th March, 1955. Previous experience in pædiatrics essential and higher qualifications desirable. Successful applicant will be required to undertake duties in the University Professorial Pædiatric Unit.

Applications, stating date of birth, nationality and previous experience together with copies of 2 recent testimonials, to be forwarded to the Group Secretary at Salford Royal Hospital, Salford, 3, not later than 29th January, 1955.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for SENIOR HOUSE OFFICER post. Salary £745 p.a., less £155 p.a. for residential emoluments.

Application forms may be obtained from the undersigned. H. R. NORTH, General Superintendent.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade), vacant 1st March, 1955. Candidates must have held house appointments but previous laboratory experience is not essential. The duties will consist of routine work in the Department of Clinical Pathology, mainly at Saint Mary's Hospitals, but the holder of the post will also spend some time in the Manchester Royal Infirmary.

Application to be made on forms obtainable from the undersigned. A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. SENIOR HOUSE OFFICER in the Department of Anæsthetics, to commence on 1st May, 1955. Resident appointment for 6 months, renewable for a second and possibly a third 6 months. A charge of £155 p.a. is made for residence. Applicants should have had experience in the specialty.

Applications to be made on forms obtainable from the undersigned and to be returned not later than 5th February, 1955.

G. H. TAYLOR, Secretary.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade), vacant on 14th March, 1955. Previous experience in pathology not essential, the post affording opportunities for gaining experience in all branches of clinical pathology.

Applications, stating age, qualifications, present post, experience, and names of 2 referees, to be forwarded immediately to—

A. H. KEATES, Group Secretary.

Withington Hospital, Manchester, 20.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maidenhead. Applications invited for post of HOUSE SURGEON, vacant immediately. Preference given to persons seeking a pre-registration post.

Applications, stating age, nationality and qualifications, with names of 3 referees, to Hospital Secretary.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RECEIVING ROOM OFFICER. Post vacant January, 1955. Salary £745 a year, with a deduction of £150 a year for residential emoluments.

Applications to the Administrative Officer at the Hospital as soon as possible.

MAIDSTONE (near). LENHAM SANATORIUM. Mid-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from practitioners, with at least 1 years experience after full registration, for the appointment of RESIDENT ASSISTANT PHYSICIAN at Lenham Sanatorium, near Maidstone. Previous experience in tuberculosis not essential. Post vacant February, 1955. The Sanatorium has 168 Beds ; is visited by Thoracic Surgeons ; is 1½ hours travelling distance from London. Salary according to experience within the scale £775–£50–£1075 a year, with a deduction of £150 for residential emoluments. Appointment for 12 months in the first instance.

Applications, with the names and addresses of 2 referees, to the Physician-Superintendent, Lenham Sanatorium, near Maidstone (Telephone No. Lenham 314).

NEWCASTLE GENERAL HOSPITAL. (647 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. DEPARTMENT OF NEUROLOGICAL SURGERY. SENIOR HOUSE OFFICER (resident or non-resident). The post affords excellent experience in neurology and would be of value to candidates preparing for a higher qualification. No surgical work is involved, the duties being purely medical and no previous neurosurgical experience is required. The appointment is tenable for 12 months in the first instance.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials.

NEWCASTLE UPON TYNE HOSPITAL MANAGE-MENT COMMITTEE. Applications are invited from registered medical practitioners for the post which falls vacant on 1st February, 1955, of SENIOR HOUSE OFFICER (preferably resident) at the Newcastle Eye Hospital (31 Beds) and the Eye Unit at Walker Clinical Annexe (21 Beds). The Hospital is recognised for the Diploma of Ophthalmology. Previous experience in ophthalmology will be an advantage. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs.

Applications, with the names of 3 referees, should be sent to the Hospital Secretary, Eye Hospital, St. Mary's-place, Newcastle upon Tyne, as soon as possible.

NEWPORT AND EAST MONMOUTHSHIRE HOSPITAL MANAGEMENT COMMITTEE. Pre-registration HOUSE SURGEONS posts vacant 1st February, all recognised F.R.C.S.

Royal Gwent, Newport (260 Beds, 10 residents). Covers 37 Beds.

St. Woolos, Newport (379 Beds). Covers 56 Beds, with Consultant and Registrar engaged only here.

Pontypool and District, Pontypool (115 Beds). Covers 31 Beds.

Write, mentioning names of 2 referees and post preferred, to T. A. JONES, Group Secretary.

64, Cardiff-road, Newport, Mon.

NORWICH. UNITED NORWICH HOSPITALS. East ANGLIAN REGIONAL HOSPITAL BOARD. Locum SENIOR REGISTRAR in Obstetrics and Gynæcology. Post for 1 year and vacant now. Candidates must possess M.R.C.O.G.

Applications, with names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 29th January, 1955.

NOTTINGHAM. CITY HOSPITAL. (804 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (surgical), vacant 1st March, 1955. The post is approved for F.R.C.S. The officer appointed will be required to spend 6 months in general surgery, 3 months thoracic surgery, and 3 months orthopædic and plastic surgery. A deduction of £150 p.a. will be made for residential emoluments.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent immediately to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Resident House SURGEON (pre-registration first or second post) required for 14th March, 1955, for 6 months. Recognised for F.R.C.S.

Applications, stating age, qualifications and experience, to be sent to the Secretary.

NOTTINGHAM AND MIDLAND EYE INFIRMARY. Required, SENIOR HOUSE OFFICER, duties to commence as soon as possible. Salary and conditions of service in accordance with Ministry regulations.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary, General Hospital, Nottingham.

NOTTINGHAM. HIGHBURY HOSPITAL. Applications are invited from fully qualified medical practitioners for the post of SENIOR HOUSE OFFICER in the Obstetrical and Gynæcological Department (41 obstetrical beds, 11 gynæcological beds and a small block for puerperal pyrexia). The appointment is for a period of 12 months commencing about the middle of January. The Hospital is recognised for the M.R.C.O.G. (Obstetrics only). Previous obstetric experience required. Salary and conditions of service in accordance with the Ministry regulations.

Applications, stating age, qualifications, and experience, also nationality, with copies of 3 recent testimonials, to be sent to—

General Hospital, Nottingham. HENRY M. STANLEY.

NOTTINGHAM HIGHBURY HOSPITAL. Senior SURGICAL HOUSE OFFICER required at the above Hospital. Good opportunity for obtaining experience in all types of general surgery. Duties to commence on 1st March, 1955.

Applications, stating age, qualifications and experience, together with copies of testimonials to be sent to Group Secretary, Nottingham General Hospital.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON for general surgery and orthopædic surgery. Recognised for the Final F.R.C.S. in General Surgery, and recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer by 25th January, 1955.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON to the Radiotherapy and E.N.T. Departments. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, should be forwarded to the Resident Medical Officer by 25th January, 1955.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN to the Radiotherapy Department. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, should be forwarded to the Resident Medical Officer by 25th January, 1955.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON to the Gynæcological Department of 25 Beds. This appointment is recognised for the M.R.C.O.G.

Applications, accompanied by 2 testimonials, should be forwarded to the Resident Medical Officer by 25th January, 1955.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY. PLYMOUTH, SOUTH DEVON AND EAST CORNWALL GENERAL HOSPITAL GROUP. Applications invited from duly qualified and registered medical practitioners for the appointment of SENIOR HOUSE OFFICER in Obstetrics and Gynæcology, vacant 1st April, 1955. There will be additional duties at the Flete Maternity Home, and the Alexandra Maternity Home, which are parts of the Department. Candidates should have had previous experience in a Department of Obstetrics and Gynæcology. The appointment will be for a period of 12 months. Salary £745 p.a. Terms and conditions of service are in accordance with the National Health Service terms. The post is recognised by the Royal College of Obstetricians and Gynæcologists for the Membership examination of the College.

Applications, stating age, nationality, qualifications and experience, together with the names and addresses of 3 referees, should be sent to ARTHUR R. CASH, Group Secretary, 7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. SENIOR HOUSE OFFICER in Casualty, vacant 5th February, 1955.

Applications, stating age, nationality, qualifications, and experience, with names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post, vacant now, of RADIOLOGICAL REGISTRAR (diagnostic) to the Portsmouth Group of hospitals. A Diploma in Diagnostic Radiology would be an advantage but candidates who have passed Part I would be considered.

Forms of application may be obtained from the Acting Group Secretary, Portsmouth Group Hospital Management Committee, 35, Grove-road South, Southsea, which should be returned to him duly completed on or before 31st January, 1955. Candidates may visit the above Group by arrangement with the Acting Group Secretary.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment, vacant now, of REGISTRAR in the Chest Services of the Group for duties at the Portsmouth Chest Clinic and the tuberculosis wards at the Infectious Diseases Hospital and Saint Mary's Hospital, Portsmouth, including experience with a major Thoracic Surgery Unit.

Forms of application may be obtained from the Acting Group Secretary, Portsmouth Group Hospital Management Committee, 35, Grove-road South, Southsea, which should be returned to him duly completed on or before 31st January, 1955. Candidates may visit the above Clinic and Hospitals by arrangement with the Acting Group Secretary.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—

GYNÆCOLOGICAL HOUSE SURGEON for duties at Queen Alexandra Hospital (50 gynæcological beds), vacant now. Post recognised for M.R.C.O.G. Pre-registration post. At the end of 6 months successful candidate would be offered post at St. Mary's Hospital, Portsmouth (50 obstetric, 40 gynæcological beds). Recognised for M.R.C.O.G. and D.Obst.R.C.O.G.

Royal Portsmouth Hospital

SENIOR HOUSE SURGEON (70 surgical beds), vacant 1st February, 1955.

HOUSE OFFICER in the Traumatic and Orthopædic Department (105 beds), vacant now.

HOUSE PHYSICIAN (65 medical beds), pre-registration post, vacant 17th February.

Saint Mary's Hospital

HOUSE PHYSICIAN (74 medical beds), pre-registration post, vacant 24th February.

Applications, stating age, experience and qualifications, together with names of 2 referees, should be forwarded as soon as possible to L. C. ROGERS.

35, Grove-road South, Southsea.

PONTYPRIDD (near). EAST GLAMORGAN HOSPITAL CHURCH VILLAGE. (316 Beds and large Outpatient Department. Committee's Base Hospital serving population of 174,000. Recognised for Membership and D.Obst.R.C.O.G., F.R.C.S., D.C.H., F.F.A.R.C.S., D.A.) PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (obstetrics and gynæcology) (to include duties at the Llwynypia Hospital).

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Courthouse-street, Pontypridd.

PERTHSHIRE. BRIDGE OF EARN HOSPITAL. Applications are invited for the following posts, which will fall vacant in the Fracture and Orthopædic Unit, on 1st February, 1955 :—

1 HOUSE SURGEON.
3 SENIOR HOUSE SURGEONS.

The Junior post is recognised for Pre-registration Hospital Service. All posts recognised by the Royal College of Surgeons under regulations for the F.R.C.S.

Applications, with details of experience, and names of 2 referees, should be sent to the Group Medical Superintendent, Perth Royal Infirmary, Perth.

PETERBOROUGH MEMORIAL HOSPITAL AND ANNEXES. EAST ANGLIAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR. Post recognised for D.A. and F.F.A.R.C.S. and provides experience in all departments including a Thoracic Unit. Appointment for 1 year, renewable for second year.

Applications, stating age, experience and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 31st January, 1955. Candidates invited to visit hospitals by direct arrangement with Hospital Management Committee Secretary, Memorial Hospital, Peterborough.

READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of a JUNIOR HOSPITAL MEDICAL OFFICER in the Area Department of Diseases of the Chest, for duty in the Reading Chest Clinic. Starting salary within the scale will be fixed by agreement with Ministry of Health, according to qualifications and experience.

Applications, stating age, and qualifications, together with names of 3 referees, should be sent to the Group Secretary at 3, Craven-road, Reading.

READING. BATTLE HOSPITAL. (374 Beds.) Applications are invited from registered and provisionally registered medical practitioners for post of RESIDENT JUNIOR HOUSE SURGEON in the Area Accident and Orthopædic Department, vacant 1st March, 1955. F.R.C.S. recognised. Also casualty duties. Salary £425–£525 p.a., less £125 board-residence.

Apply, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered and provisionally registered medical practitioners (Male or Female) for the resident post of JUNIOR HOUSE SURGEON (E.N.T.), vacant 21st February, 1955. Salary £425–£525 p.a., less £125 board-residence

Write, stating age, qualifications with dates, nationality, with copy of 1 recent testimonial, to Secretary.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) RESIDENT HOUSE OFFICER (general surgery) required from 1st March, 1955. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications should be forwarded immediately to Medical Superintendent, stating also names of 2 referees.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) RESIDENT HOUSE PHYSICIAN required from 6th March, 1955. This Hospital provides for acute medical and surgical patients in addition to a limited number of fever cases. The post, which is also open to pre-registration candidates, offers good opportunities for gaining experience in both general medicine and fevers.

Applications should be addressed immediately to Medical Superintendent, stating also names of 2 referees.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) RESIDENT HOUSE SURGEONS (2) required from 23rd February, 1955, in the General Surgical Unit at the above Hospital. Recognised for F.R.C.S. Open to either pre-registration applicants or to fully qualified practitioners. This very active general surgical unit of approximately 100 beds affords ample opportunity for candidates to obtain first-class tuition and experience.

Applications should be forwarded immediately to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER in Pathology required in this large general hospital containing well-equipped laboratory where excellent opportunities exist for gaining extensive experience.

Applications should be sent immediately to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) ORTHOPÆDIC HOUSE SURGEON (resident) required in the Orthopædic and Accident Unit from 26th January, 1955. The service consists of 100 beds equally divided between traumatic surgery and "cold" orthopædics. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications to be sent to Group Secretary, Romford Hospital Management Committee, Oldchurch Hospital, as early as possible.

ROTHERHAM HOSPITAL, Doncaster-gate, Rotherham. (161 Beds. Recognised for the F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 31st January, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SOUTH-WESTERN REGIONAL HOSPITAL BOARD. (Joint appointment with the United Bristol Hospitals.) Applications are invited by the above Boards from registered medical practitioners for the joint appointment of REGISTRAR in Orthopædic and Traumatic Surgery to work at Winford Orthopædic Hospital and at the United Bristol Hospitals. The successful candidate will be appointed in the first instance to work up to 1 year in the United Bristol Hospitals.

Applications, stating date of birth, qualifications and experience together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 5th February, 1955.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR in the Regional Pool of Anæsthetists, based on the Royal Infirmary of Edinburgh. The appointment is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 3 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, by 12th February, 1955.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a SENIOR REGISTRAR in Ophthalmology at the Royal Infirmary of Edinburgh. The appointment is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 3 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, by 12th February, 1955.

SCOTLAND SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Dermatology at the Royal Infirmary of Edinburgh. The appointment is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 19th February, 1955.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as REGISTRAR in Surgery to the Edinburgh Northern Group of hospitals. The person appointed must be prepared to devote a part of the period of his appointment to duty in the surgical pædiatric units of this Group. The appointment is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 19th February, 1955.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Psychiatry at the Royal Edinburgh Hospital for Mental and Nervous Disorders. The appointment is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, by 12th February, 1955.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for a whole-time appointment until 31st December, 1956, as a Transitional SENIOR REGISTRAR in Orthopædic Surgery for duty in Fife. Remuneration will be at the rate of £1400 p.a. and the person appointed should have already completed the greater part of his Senior Registrar training in orthopædic surgery. The appointment is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 3 referees, should be submitted by 19th February, 1955, to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, from whom further particulars can be obtained.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Psychiatry at Hellsdyke Mental Hospital, Larbert, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 14th February, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Medicine based at Law Hospital, Carluke, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 14th February, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Obstetrics and Gynæcology, based at the Royal Maternity Hospital and Royal Infirmary, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 14th February, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Anæsthetics based at the Victoria Infirmary, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 14th February, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR HOUSE OFFICER (Male or Female), now vacant in the Psychiatric Unit at Stobhill Hospital, Glasgow. The appointment is resident and will be for 1 year in the first instance. The unit consists of 180 beds with 1200 admissions yearly and deals with acute treatable cases; it is recognised for the D.P.M.

Applications, stating age, qualifications, experience, and present appointment, and naming 3 referees, to be lodged immediately with the Secretary, Board of Management for Glasgow Northern Hospitals, 13, Woodside-place, Glasgow, C.3.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Pathology based at the Western Infirmary, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 14th February, 1955.

SHREWSBURY. EYE, EAR AND THROAT HOSPITAL. SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (E.N.T.), vacant immediately. Duties at E.N.T. Hospital (68 Beds) and Copthorne Hospital (168 Beds). Post recognised for the D.L.O.R.C.S.

Applications, with copy testimonials, to the Group Secretary, Royal Salop Infirmary, Shrewsbury.

SHEFFIELD, C. WHARNCLIFFE HOSPITAL. Sheffield NO. 2 HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON required immediately and until 15th July, 1955. Post provides experience in general surgery, and is approved for Pre-registration Service. National Health Service salary and conditions.

Applications forthwith to—

W. R. CARPENTER, Group Secretary.

SHEFFIELD REGIONAL HOSPITAL BOARD. Supernumary SENIOR REGISTRAR in General Medicine required for the Derbyshire Royal Infirmary from 1st April, 1955. Duties will be divided approximately equally between clinical work and clinical research. Candidates will be required to submit, in outline, proposals for the research project they wish to pursue. The tenure of this appointment will be for 1 year in the first instance.

Further details and application forms obtainable from the Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Completed forms to be returned by 7th February, 1955.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT SENIOR REGISTRAR in Radiology required on 12th April for approximately 9 notional half-days per week at the City General Hospital, Sheffield, and approximately 2 notional half-days per week at the Barnsley Hospitals. Candidates should hold a Diploma in Diagnostic Radiology. Appointment for 1 year in the first instance reviewable annually. It has been agreed between the Sheffield Regional Hospital Board and the Board of Governors of the United Sheffield Hospitals that subject to satisfactory work and progress the tenure of the appointment will be divided between the City General Hospital, Sheffield and Barnsley Hospitals and the Teaching Hospitals of the United Sheffield Hospitals.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 7th February, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL HOSPITAL UNIT. Applications are invited from registered medical practitioners for the non-resident post of Part-time CASUALTY OFFICER (Senior House Officer grade) at the above Hospital. Duties will be for 5 half-days each week in the afternoons—a total of 17½ hours per week.

Applications, stating age, qualifications and experience, with the names of 3 referees, should be sent immediately to the Superintendent, Royal Hospital, West-street, Sheffield, 1.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (medical) required for post vacant 1st February.

Applications, stating age, and qualifications, with copies of 2 recent testimonials, to Hospital Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (casualty) required, 1 of 2, for busy Casualty Department. Post vacant 22nd January. Experience provided in orthopædic and plastic cases.

Applications, stating age and qualifications, with 2 recent testimonials, to Hospital Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (casualty) required, 1 of 2, for busy Casualty Department. Experience provided in orthopædic and plastic cases.

Applications, stating age and qualifications, with copies of 2 testimonials, to Hospital Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN required for pre-registration post, vacant 6th February. Appointment offers considerable experience in general acute medical work.

Applications, with copies of 2 recent testimonials, to Hospital Secretary, by 24th January.

SOUTHALL, MIDDLESEX. ST. BERNARD'S HOSPITAL FOR NERVOUS AND MENTAL DISORDERS. Applications are invited for the post of SENIOR HOUSE OFFICER (non-resident). Facilities are afforded to junior staff to become versed in all branches of psychiatry. National Health Service salary and conditions.

Applications, giving full details and copies of 3 recent testimonials, should be sent to the Physician-Superintendent, within 14 days of appearance of this advertisement.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) CASUALTY OFFICER/SENIOR HOUSE OFFICER (orthopædic). Required for the above Hospital (Orthopædic Unit 74 Beds) in January. This Hospital is the centre to which all trauma from a large industrial town and port is directed, thus providing excellent experience in the treatment of traumatic conditions.

Applications, with copies of testimonials, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) ORTHOPÆDIC HOUSE SURGEON required. Post recognised for Pre-registration Service and tenable for 6 months. This Hospital is the centre to which all trauma from a large industrial town and port is directed, thus providing excellent experience in the treatment of traumatic conditions; patients with orthopædic conditions are also drawn from a wide area.

Applications, with copies of testimonials, should be sent as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

STOCKPORT AND BUXTON HOSPITAL MANAGEMENT COMMITTEE. ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER (non-resident). Applications are invited from suitably qualified medical practitioners to work under the Consultant Psychiatrist in the above Groups. The work will be in outpatient clinics and the mental observation wards attached to the general hospitals in the Groups. Facilities for attending the course for the D.P.M. at Manchester University can be given.

Applications, giving age, nationality, and full details, with names of referees, to be sent to the Group Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport.

STOCKPORT. STEPPING HILL HOSPITAL. (Recognised for D.Obst.R.C.O.G.) Applications are invited for the post of HOUSE OFFICER (obstetrics and gynæcology). The post, which is resident, becomes vacant 14th February, 1955, at the above Hospital, which provides 73 beds for obstetrics and 36 beds for gynæcology.

Applications, stating age, qualifications and experience, together with copies of 2 testimonials, or the names of 2 referees, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, immediately.

STOURBRIDGE. THE CORBETT HOSPITAL. (106 Beds.) REGISTRAR in General Surgery. Experience specialty essential, higher qualifications desirable. Resident. Vacant 14th February.

Application forms from Group Secretary, Guest Hospital, Dudley, to be returned before 7th February, 1955. Candidates may visit Hospital.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR required to the Special Unit for Research in Juvenile Rheumatism at the above Hospital. Post offers scope for those interested in research, paediatrics, rheumatology or cardiology. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 6th February.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. THORACIC UNIT. Applications invited for the following appointment now available in the Leeds Regional Thoracic Centre (54 Beds) at Pinderfields General Hospital:—

SENIOR HOUSE SURGEON. Salary £745 p.a., less a charge of £155 p.a. for board, lodging, &c., or

Locum SENIOR HOUSE SURGEON. Salary £14 10s. per week, less a charge of £2 19s. 6d. a week for board, lodging, &c.

Address written applications, with full particulars and 2 names and addresses for reference, to—

W. BOWRING, Group Secretary.
Victoria Chambers, Wood-street, Wakefield.

WARRINGTON GENERAL HOSPITAL. (368 Beds.) Applications are invited for the post of HOUSE SURGEON (Male or Female) at the above Hospital, recognised for pre-registration, commencing on 23rd February, 1955. National Health Service terms and conditions. The staffing of the Surgical Unit consists of a Senior Registrar, Registrar, and 2 House Surgeons. The post offers a comprehensive training in surgery.

Apply, giving full particulars, to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARRINGTON INFIRMARY. Applications are invited from qualified practitioners for the vacancy of RESIDENT ANÆSTHETIST (Senior House Officer grade), Male or Female, at the Warrington Infirmary. The Infirmary is recognised for the D.A. examination. Scale of salary £745 p.a., less £130 p.a. for residential emoluments.

Applications to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for the post of RESIDENT CASUALTY OFFICER (Male or Female). The post is graded Junior Hospital Medical Officer. Scale of salary £775–£50–£1075, less a deduction of £130 for residential emoluments. Applications will also be considered from Junior Medical Officers who would be graded House Officer or Senior House Officer at the scale appropriate to the experience of the applicant. Consideration will also be given to applicants who desire the appointment on a short-term basis. A whole-time Senior Hospital Medical Officer is in charge of the Department.

Applications, stating age, experience, and qualifications, should be forwarded or telephoned to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs
(Tel. No. Warrington 1666).

WATFORD AND DISTRICT PEACE MEMORIAL HOSPITAL, WATFORD, HERTS. (198 Beds.) Applications are invited for the pre-registration post of HOUSE SURGEON at the above Hospital. Salary according to National Health Service scale.

Applications, with 2 copies of recent testimonials, should be sent to CYRIL HOPKINSON, Administrator.

WATFORD. SHRODELLS HOSPITAL. (320 Beds.) Applications are invited for the post of GYNÆCOLOGICAL HOUSE OFFICER (pre- or post-registration). If held by a registered medical practitioner, the post will be paid on Junior Hospital Medical Officer scale. Post vacant middle February.

Applications, together with copies of 2 testimonials, to reach the Medical Officer-in-Charge as soon as possible.

WELSH REGIONAL HOSPITAL BOARD. Registrar in Orthopædic Surgery based at Rhyl, to serve Clwyd and Deeside Hospital Management Committee. Also required assist in treatment of long-stay orthopædic cases at area sanatoria. Subject to review end of first year.

Forms of application from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WEYMOUTH AND DISTRICT HOSPITAL. (124 Beds.) HOUSE SURGEON required (Male or Female). Post vacant mid-February and tenable for 6 months. Recognised for F.R.C.S. examination and approved for Pre-registration Service.

Applications, stating age, experience, qualifications and nationality, together with copy testimonials, to Group Secretary, West Dorset Hospital Management Committee, Damers-road, Dorchester, Dorset, immediately.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. 2 HOUSE SURGEONS (pre-registration posts). Recognised F.R.C.S. 1st vacant 7th February (casualty duties), 2nd vacant 21st February (general duties).

Applications, together with names of 2 referees, to Secretary, Wigan Infirmary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) CASUALTY OFFICER (Senior House Officer grade), vacant 1st March. Post recognised for the F.R.C.S. The appointment will be for 6 months in the first instance.

Applications, with copies of 2 testimonials, should be sent to the Group Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. Obstetric AND GYNÆCOLOGICAL HOUSE SURGEON required, Male or Female. Post recognised for both M.R.C.O.G. and D.Obst.R.C.O.G. but not for pre-registration. Successful candidate will be resident at Old Windsor Unit of Hospital. Must be member of a Medical Protection Society.

Applications, stating age, nationality, qualifications with dates, with copies of recent testimonials or names of 3 referees, to Hospital Secretary by 31st January.

WINDSOR. KING EDWARD VII HOSPITAL. Resident SURGICAL REGISTRAR required at above Hospital which may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 30th January.

WORCESTER ROYAL INFIRMARY. Applications invited for post of RESIDENT ANÆSTHETIST (Senior House Officer status) now vacant and tenable for 1 year. The post is recognised for the Diploma in Anæsthetics and the holder may expect to gain a great deal of experience with emergency work.

Applications, with copies of 3 testimonials, to be sent to the Secretary.

WORCESTER ROYAL INFIRMARY. Applications invited for post of HOUSE SURGEON (pre-registration or otherwise), now vacant.

Applications, with testimonials, to the Secretary.

WREXHAM. MAELOR GENERAL HOSPITAL. (591 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.) and is a pre-registration post.

Applications, stating age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, should be addressed to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

WREXHAM. WAR MEMORIAL HOSPITAL. (230 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.) and is a pre-registration post.

Applications, stating age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, should be addressed to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

YORK. COUNTY HOSPITAL. (Acute Hospital of 269 Beds with full Consultant staff.) CASUALTY OFFICER (with charge of orthopædic beds). Junior Hospital Medical Officer grade, required 9th February, 1955. Resident or non-resident. Salary £775–£50–£1075 p.a., less £153 p.a. if resident. Recognised for F.R.C.S

Applications, giving age, nationality, qualifications, experience, and names of 2 referees, immediately to the Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.

Broadgate (Mental) Hospital, Beverley, Yorkshire (650 Beds)

JUNIOR HOSPITAL MEDICAL OFFICERS (2) required now. Time for studying. Salary £775–£50–£1075.

Detailed applications to Group Secretary, Westwood Hospital, Beverley.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.

Westwood Hospital, Beverley, Yorks. (207 Beds.)

HOUSE SURGEON (first, second, or third post), vacant mid-February. General surgical duties some orthopædics. Offering good opportunity for general experience in busy acute General Hospital. Recognised for F.R.C.S. Approved pre-registration post. Fully-qualified practitioners may apply.

Apply Group Secretary.

IRELAND. ST. JOHN OF GOD PSYCHIATRIC HOSPITAL, STILLORGAN, DUBLIN. Applications invited immediately for positions of :—

(1) REGISTRAR;
(2) HOUSE PHYSICIAN;

to the above Hospital.

Interview by appointment.

All inquiries directed to the Secretary, St. John of God Hospital, Stillorgan, Dublin, Eire.

NORTHERN IRELAND HOSPITALS AUTHORITY. Applications are invited for a whole-time post as REGISTRAR in Psychiatry at Londonderry and Gransha Hospital, Londonderry (a mental hospital). The terms and conditions will be in accordance with the application of the Spens report to Northern Ireland.

Applications to be made on a form obtainable (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, 44–46, Queen-street, Belfast, and to be returned not later than 19th February, 1955.

BALTIMORE, MARYLAND, U.S.A. FRANKLIN SQUARE HOSPITAL. ROTATING INTERNSHIPS available. Fully approved, Council on Medical Education, American Medical Association.

Applications to Franklin Square Hospital, Baltimore 23, Md, U.S.A.

BRITISH COLUMBIA. CHILDREN'S HOSPITAL, 250, West 59th-avenue, VANCOUVER 15, BRITISH COLUMBIA, CANADA. 2 PÆDIATRIC RESIDENTS required for a period of 1 year, commencing 1st July, 1955, for 83-Bed children's general hospital. University teaching programme. Accommodation available. Remuneration $175 per month, less $15 per month accommodation. Meals available if required.

Applications, stating age, qualifications, nationality, accompanied by recent references and photograph, should be forwarded by air-mail to the Administrator.

Public Appointments

ROYAL ARMY MEDICAL CORPS. For new conditions and terms of service see page 37.

FACTORY DOCTORS. Factories Acts, 1937 and 1948. The following appointments as Appointed Factory Doctor are vacant. Apply to Chief Inspector of Factories, 8, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
PENSHURST	KENT	5TH FEBRUARY, 1955
VENTNOR	SOUTHAMPTON	5TH FEBRUARY, 1955
SHELF	YORK	5TH FEBRUARY, 1955
BRADFORD WEST.	YORK	5TH FEBRUARY, 1955

GOLD COAST LOCAL CIVIL SERVICE. Gold Coast GOVERNMENT. RADIOLOGISTS are required to take charge of Hospital X-ray Department and to train junior staff as X-ray attendants. Appointment will be to the Gold Coast Local Civil Service on contract for 2 tours of service of 18–24 months in the first instance. Salary scale is £1330–£2310 p.a. A gratuity (taxable) at the rate of £37 10s. for each completed 3 months of service is also payable. Candidates in the National Health Service may resign from the National Health Service but retain their superannuation rights while in the Gold Coast (up to 6 years) and receive a gratuity (taxable) of 20% of the aggregate of their Gold Coast salary after their engagements. Salary scale, in this case, is £1055–£1850 p.a. Starting point in both salary scales is determined according to qualifications and experience. Quarters are provided at rental not exceeding £150 p.a. Income-tax at local rates. Free passages provided for Officer, wife, and up to 3 children under 13 years of age. Annual local leave is permissible and generous home leave is granted after each tour of 18 months. Candidates must possess medical qualifications registrable in the United Kingdom and the D.M.R.D. Possession of the D.M.R.T. is an added qualification though not essential.

Application forms can be obtained from the Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD. 117/13/07).

HER MAJESTY'S OVERSEA CIVIL SERVICE. Medical BRANCH—WINDWARD ISLANDS. DOCTORS are required for general medical duties in the Windward Islands. Candidates may be asked to serve in any district or institution in Grenada, St. Lucia, St. Vincent or Dominica. Appointments are either made on a permanent basis with pension (non-contributory) at the age of 55, or on short-term agreement (3 years), depending on the posting. Salary scale ranges from £800 to £1000 a year. Pension is earned at the rate of 1/600th of final pensionable emoluments for each completed month of service. Officers appointed to districts are normally permitted private practice, but officers appointed to hospital posts receive an allowance of £100 p.a. in lieu. Income-tax at local rates. When available, Government quarters are provided at a rental of 10% of salary or 5% of the assessed value of the quarters, whichever is less. Free passages are provided on appointment for Officer and family, not exceeding 5 persons in all, and return passages are provided for Officers and their families appointed on agreement. Leave passages are provided on completion of a minimum tour of either 3 or 5 years depending on the island to which the Officer is posted. Generous home leave granted after each tour.

Application forms from the Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD. 117/40/01).

HER MAJESTY'S OVERSEA CIVIL SERVICE. Medical BRANCH—HONG KONG. PATHOLOGIST required in Medical Department, Hong Kong, to undertake vaccine production, public health laboratory work, clinical pathology and post-mortem work. Candidates must be under 35 years of age, possess a medical qualification registrable in the United Kingdom and have had 3 years professional experience, preferably in pathology. Appointment on 2 years probation for permanent and pensionable employment. Salary, including pensionable expatriation pay, is in scale $1530–$2548.33 a month (i.e., £1147 10s.–£1911 5s. a year—1 Hong Kong dollar equals 1s. 3d.). In addition a temporary, variable, non-pensionable cost-of-living allowance is payable according to family circumstances, at present a single man on the minimum of the salary scale would be paid approximately £315 a year, and a married man on the maximum salary would be paid approximately £975 a year. Free passages in both directions provided for Officer, wife, and up to 3 children under the age of 18. Quarters, when available, are provided at rental of not more than 4th of basic salary. Income-tax at local rates. Annual local leave is permissible and generous home leave is granted after each tour of 4 years. Climate is favourable for Europeans—a cool dry winter with well-marked changes of seasons. Education facilities are available. Pension is 1/600th of final pensionable emoluments for each completed month of reckonable service. Officers permanently employed are required to contribute to a Widows' and Orphans' Pension Scheme.

Application forms from Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD. 117/51/025).

HER MAJESTY'S OVERSEA CIVIL SERVICE. Medical BRANCH—ADEN. MEDICAL OFFICER required for general duties in the Medical Department of Aden. Appointment can be made on a permanent basis with pension at age of 45–55, or on short-term contract with gratuity (taxable) on satisfactory completion of service. Candidates in the National Health Service may resign from the National Health Service but retain their superannuation rights (up to 6 years) and receive a gratuity (taxable) of 20% of the aggregate of their salary after their engagements. Salary scale including expatriation pay, ranges from £1212 to £1999 a year; starting salary is determined according to the candidate's qualifications and experience. Pension in the case of permanent appointment is earned at the rate of 1/600th of the final pensionable emoluments for each completed month of service. The gratuity in respect of contract appointments is at the rate of £37 10s. for each completed 3 months of service, payable on satisfactory completion of contract. An outfit allowance of £30 is payable on appointment. Furnished quarters are provided at low rental. Income-tax at local rates. Free passages are provided for Officer and wife, and up to 4 children under the age of 18. Tour of service is from 18 to 24 months. Local leave is permissible and generous home leave is granted after each tour. Candidates must possess medical qualifications registrable in the United Kingdom. Permanent officers are eligible to be considered for promotion in Aden and elsewhere.

Application forms can be obtained from the Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD. 117/2/01).

DONEGAL COUNTY COUNCIL. Applications are invited for the post of Temporary MEDICAL OFFICER for Lifford District Hospital. The successful applicant will be required to attend at the Hospital 4 hours on 2 days per week and for 2 hours on the remaining days and in emergencies.

Remuneration : £850 (inclusive) p.a., with no rights to private beds or fees of any kind.

Qualifications : Intending applicants should possess the M.Ch. degree from a recognised University or the F.R.C.S.I. or equivalent, or have at least 5 years satisfactory experience in the practice of the medical profession, at least 3 of which were devoted to surgical work, including the performance of major surgical operations.

The appointment will be for a period of at least 6 months and will be terminable by 2 weeks notice on either side.

Application forms and full particulars of the post may be obtained from the undersigned with whom completed application forms must be lodged on or before 26th January, 1955.

T. J. MCMANUS, County Secretary.

County House, Lifford, 7th January, 1955.

FEDERATION OF RHODESIA AND NYASALAND. MEDICAL INTERNSHIPS : Federal Ministry of Health. Immediate vacancies for Interns exist at several Government Hospitals in Southern Rhodesia (salary £40 per mensem with free board and furnished quarters) and Northern Rhodesia (£52 plus free furnished quarters). The appointments, with free air passage, will be for 1 year. Subsequently there may be opportunities for permanent pensionable appointments as Government Medical Officers (£1200–£1800) or for Senior House Surgeon appointments at hospitals recognised towards F.R.C.S. (Further vacancies will arise from time to time in the future and applications will be considered from students taking Finals in 1955 and 1956.)

Application forms and further details from the Secretary, Rhodesia House, 429, Strand, London, W.C.2 ; completed forms to be returned by 12th February.

GLOUCESTERSHIRE COUNTY COUNCIL. Applications are invited for the appointment of DEPUTY COUNTY MEDICAL OFFICER OF HEALTH AND DEPUTY PRINCIPAL MEDICAL OFFICER. The salary will be £1533 6s. 8d. p.a., rising by annual increments of £100 to £1833 6s. 8d. Candidates must be registered medical practitioners possessing the Diploma in Public Health. The appointment will be superannuable and the successful candidate must pass a medical examination. Candidates must be able to drive and possess a motor-car. Travelling and subsistence allowances payable on Council's scale.

Forms of application with particulars of duties and conditions of appointment may be obtained from the County Medical Officer of Health, Berkeley House, Berkeley-street, Gloucester, to whom completed applications should be sent not later than 4th February, 1955.

GUY H. DAVIS, Clerk of the County Council.

Shire Hall, Gloucester.

LANCASHIRE COUNTY COUNCIL. Registered medical practitioners required for appointment of ASSISTANT DIVISIONAL MEDICAL OFFICERS in areas adjacent to Blackburn, Bolton/Bury, Lancaster, Leigh and Oldham. Possession of D.P.H. desirable. Salary £950–£1300 p.a. Travelling and subsistence allowances where applicable.

Application forms and further particulars from County Medical Officer of Health, East Cliff County Offices, Preston.

MANCHESTER. CITY OF MANCHESTER TRANSPORT DEPARTMENT. MEDICAL OFFICER. Applications are invited for this whole-time superannuable appointment, the salary scale for which is J.N.C. "F" (£1517 10s.–£52 10s.–£1780 p.a.). Commencing salary will be fixed according to experience and qualifications.

Further particulars, together with forms of application, may be obtained from the Town Clerk, Town Hall, Manchester, 2, to whom the completed form should be returned (endorsed "Medical Officer—Transport Department") not later than 31st January, 1955. Canvassing will disqualify.

MANCHESTER. CITY OF MANCHESTER HEALTH DEPARTMENT. MEDICAL OFFICER (maternity and child welfare). Applications are invited from registered medical practitioners (Male or Female) for the above position on the permanent staff. Applicants should have obstetric and/or paediatric experience and will be required to undertake duties principally in maternity and child welfare clinics. Possession of the D.Obst.R.C.O.G., D.P.H. or D.C.H. qualification will be an advantage. Salary scale £950 rising to £1300 p.a. The appointment is subject to a medical examination and the City Council's conditions of service.

Application forms, obtainable on request, must be returned to the Town Clerk, Town Hall, Manchester, 2, and not to any member of the Council, within 21 days of the appearance of this advertisement, envelopes must be endorsed "Medical Officer, M. & C.W." Canvassing is prohibited.

MIDDLESEX COUNTY COUNCIL. Assistant Medical OFFICER (whole-time) required in County Health Department, initially in Area No. 3 (Hornsey and Tottenham). Duties mainly for supervision of health of young children attending infant welfare clinics, toddlers clinics and day nurseries, also routine medical inspections at schools and attendance at clinics for school children. D.P.H. or equivalent qualification required. Salary £950–£50–£1300 p.a. Established. Subject to medical assessment and prescribed conditions.

Apply, stating age, qualifications, experience, names of 2 referees, to Area Medical Officer, Local County Offices, Somerset-road, Tottenham, N.17, by 29th January (quote P.775 L.). Canvassing disqualifies.

A. G. GRAVES, Deputy Clerk of the County Council.

Guildhall, Westminster, S.W.1.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

WILLESDEN. Applications invited for Vacancy. List at present approximately 1000. Intermediate area. Premises may be available. Apply on E.C.16A before 29th January, 1955, to G. MADDEN, Esq., Middlesex Executive Council.

Gloucester House, Gloucester Gate, London, N.W.1.

EPSOM, SURREY. Applications invited for retirement VACANCY in above urban area. List about 800. Residence and surgery will not be available. Intermediate area. Applications on Form E.C.16A to reach the undersigned on or before 4th February, 1955.

S. H. BENNETT, Clerk, Surrey Executive Council.

187, Ewell-road, Surbiton, Surrey.

LIVERPOOL. KENSINGTON/EDGE HILL. Applications invited for VACANCY (urban) due to resignation. List approximately 2600. Accommodation available. Apply on Form E.C.16A not later than 5th February, 1955, to—

J. G. DONCASTER, Clerk of Liverpool Executive Council.

36, Princes-road, Liverpool, 8.

LIVERPOOL. SPARROW HALL ESTATE. Applications invited in connection with establishment of Medical Practice on Corporation Housing Estate. Accommodation on Estate will be available. Apply on Form E.C.16A not later than 5th February, 1955, to—

J. G. DONCASTER, Clerk of Liverpool Executive Council.

36, Princes-road, Liverpool, 8.

STOKE-ON-TRENT EXECUTIVE COUNCIL. Applications invited for VACANCY, chiefly urban. List at present approximately 2160. Residence and surgery available. Apply on Form E.C.16A before 7th February, 1955, to—

W. E. WALKER, Stoke-on-Trent Executive Council.

80, High-street, Stoke on-Trent.

LAGOS, WEST AFRICA. Locum (Male) required for 6 months in busy urban and commercial practice. Salary £100 per month and all found (includes return fare, full board with service, car). Possibility of permanency. Apply by air mail to "Locum," c/o Barclays Bank D.C.O., 55, Marina, Lagos, Nigeria.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies.

Well-known pharmaceutical company wishes to appoint a medical man for the pharmacological study and clinical testing of new products. The appointment is full-time. Experience of clinical research and/or pharmacological investigation is desirable. The commencing salary will be £1250 to £1750 p.a. according to experience, although in exceptional circumstances a higher salary might be paid.—Apply : Address No. 998, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Applications are invited for the appointment of a Medical Officer with a leading British company in British West Africa. Applicants should not be more than 32 years of age, should have held a resident surgical post, and been employed in general practice. Tropical experience is desirable but not essential. Salary will be in accordance with age, experience and qualifications but will not be less than £1500 p.a. In addition, there are family allowances, free passages to and from West Africa, and free furnished quarters. Membership of the pension fund is compulsory. Tours of duty will be up to 21 months each followed by leave on full pay.—Applications should be made to Address No. 947, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Senior Technician with experience in Biochemistry and/or Biology required for position of Research Assistant to the Research Manager of a company manufacturing Pharmaceutical and Medicinal Preparations. The post is a responsible one and calls for a first-rate, thorough worker, possessing keenness and initiative. Contributory Pension Scheme.—Apply to : Secretary, BENGER'S LIMITED, Holmes Chapel, Cheshire.

Experienced G.P. available, occasional surgeries, visits, emergencies.—Telephone : MAI 2856.

Accountant, experienced, would accept part-time work with nursing-home or doctor. London area or near.—Write BM/HEXY, London, W.C.1.

Wimpole-street, W.1, of interest to Medical and Dental Consultant. Vacant possession of complete house, 12 rooms, bathroom, and kitchen. 959 years lease at £50 p.a. Price £7000. —Apply : ALBERT PRIOR & GRAINGER, 23, Ship-street, Brighton.

Austin. The new Cambridge A40 and A50 and all Show Models. Limited number of orders now acceptable from proven essential users.—Application form, brochures, easy terms, from Austin House, 140/144, Golders Green-road, Golders Green, London, N.W.11.

Electrocardiograph for sale (Cambridge portable). In good condition.—Apply to Secretary, Wembley Hospital, Wembley, Middx.

Microscopes. Highest prices paid for good modern types. Send or bring your equipment for valuation.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Haematology, Biochemistry. Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE, LTD., 98, Victoria-street, S.W.1 (Phone : VICtoria 0141), who are specialists in this kind of work.

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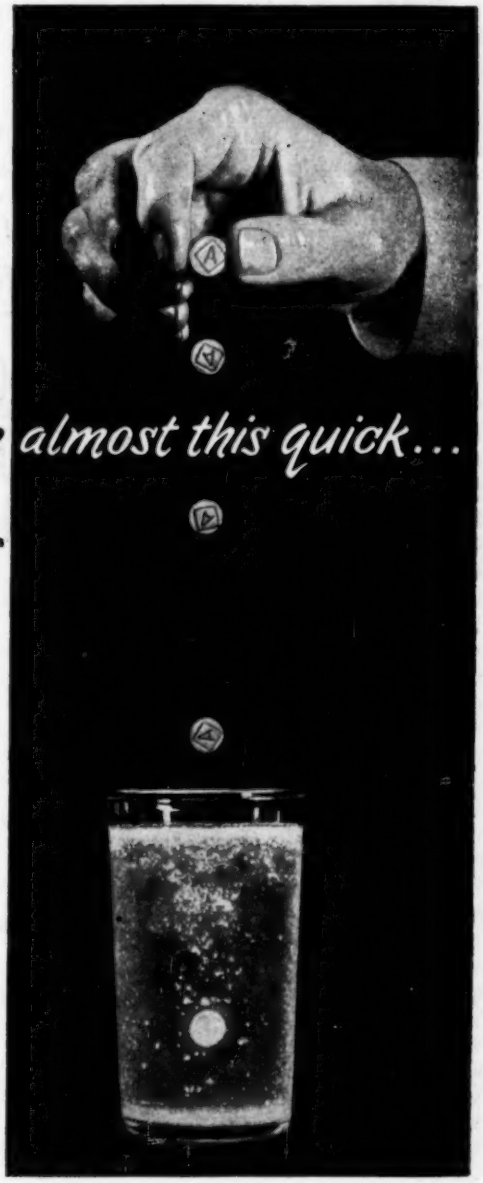

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